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PRELIMINARY REPORT ON AMINO ACIDS AND SERUM PROTEIN VARIATIONS THROUGHOUT PREGNANCY.

By L. O. S. POIDEVIN,

Director of Obstetrics, University of Adelaide.

THE object of this study was to find out the variations of amino acids and serum proteins throughout normal and abnormal pregnancies in South Australian women. Work was started in 1952 and is still in progress, and this paper reports results obtained up to the end of that year. A more complete discussion of the results is to be left until the present investigation has been completed. The biochemical work was conducted by Joan Paton and Maurice Wellby under a grant from the National Health and Medical Research Council of Australia at the Institute of Medical and Veterinary Science, Adelaide.

Methods of Study.

Patients were selected as they reported at the ante-natal clinic of the Queen Victoria Maternity Hospital, Adelaide. Samples of morning urine and blood were collected at various stages of pregnancy, in the labour ward service and six weeks *post partum*. Chromatography was used in the analysis of the amino acids in urine and serum, and paper electrophoresis was used to study the serum proteins. The technical details are described in the paper by Paton and Wellby in this issue.

Types of Patients Studied.

Approximately equal numbers of *primiparæ* and *multiparæ* were chosen for study. At the completion of each patient's investigation it was reviewed and the patient was placed in one of two groups: (*a*) patients who remained normal throughout; (*b*) patients who developed toxæmia.

The first group was subdivided into those who had previously had toxæmic pregnancies and those who had not. Figures for non-pregnant normal subjects were provided as controls and were obtained from healthy women of the same age group. The final report when published should involve some 250 cases.

Results and Discussion.

The results as tabulated below do not show the variations found in each individual case, because it is practicable to publish the results only in groups as at each period of examination. The number of patients examined at each period is shown. Variations are due mainly to unkept appointments. Attendances at the six weeks post-partum appointment were very few.

TABLE I.

Amino Acids in Urine.[1]

Subjects.	Aspartic Acid.	Glutamic Acid.	Glycine.	Serine.	Taurine.	Threonine.	Alanine.	Valine.	Glutamine.	Histidine.	Cystine.	"A."[2]	Basic Amino Acids.[3]	*Et cetera.*[4]	Totals.	Number of Cases.
Normal Pregnancy.																
Non-pregnant ..	0·3	0·7	3·7	3·1	1·5	0·3	1·6	0·4	2·3	1·2	1·4	0·9	0·1	0·0	17·5	18
Before 25 weeks ..	0·4	1·2	3·9	3·0	0·7	1·1	2·2	0·3	2·9	2·3	1·4	0·7	0·4	0·3	20·8	55
25 to 30 weeks ..	0·5	1·3	3·8	3·3	0·6	1·9	2·8	0·3	3·0	2·0	1·8	0·5	0·3	0·2	22·3	34
31 to 34 weeks ..	0·6	1·3	3·6	3·5	0·4	2·4	2·8	0·2	2·9	1·6	1·8	0·5	0·2	0·2	22·0	50
35 to 36 weeks ..	0·4	1·2	3·2	2·9	0·2	1·7	2·5	0·2	2·4	1·6	1·6	0·5	0·1	0·1	18·6	41
37 to 38 weeks ..	0·7	1·1	3·3	2·5	0·3	1·6	2·5	0·3	2·6	1·8	1·6	0·7	0·2	0·2	19·4	30
L.W.[5]	0·6	0·9	3·3	3·0	0·2	1·6	2·2	0·3	2·6	1·7	1·7	0·6	0·2	9·2	19·1	49
Normal Pregnancy (Previously Toxæmic).																
Non-pregnant ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Before 25 weeks ..	0·5	1·1	3·6	2·9	0·6	1·6	2·5	0·6	2·6	2·0	1·4	0·8	0·2	0·3	20·6	18
25 to 30 weeks ..	0·5	1·6	3·6	2·6	0·2	1·7	2·3	0·2	2·5	1·7	1·1	0·6	0·1	0·1	18·8	10
31 to 34 weeks ..	0·6	1·6	3·7	2·9	0·2	2·1	2·5	0·5	2·9	1·7	1·7	0·8	0·2	0·2	21·6	16
35 to 36 weeks ..	1·0	1·3	4·0	3·4	0·4	2·2	2·5	0·5	2·8	2·0	1·7	0·9	0·3	0·3	23·3	13
37 to 38 weeks ..	1·0	1·1	3·4	3·1	0·2	1·7	3·2	0·2	3·0	2·0	1·4	0·8	0·1	0·0	21·2	8
L.W...	0·6	1·1	2·8	2·8	0·3	1·5	2·6	0·8	2·6	2·1	2·2	0·9	0·2	0·0	20·5	10
Toxæmic Pregnancy (Current Pregnancy).																
Before 25 weeks ..	0·5	1·3	4·1	3·0	0·6	1·3	2·2	0·3	2·9	2·7	1·5	0·7	0·3	0·4	21·8	26
25 to 30 weeks ..	0·5	1·3	3·4	3·1	0·5	2·0	2·4	0·3	2·8	1·8	1·4	0·5	0·3	0·4	20·7	20
31 to 34 weeks ..	0·7	1·6	4·0	3·4	0·3	2·1	2·8	0·3	3·1	2·0	1·9	0·7	0·3	0·3	23·5	26
35 to 36 weeks ..	0·6	1·0	3·2	3·2	0·5	1·8	2·7	0·2	2·6	1·6	1·5	0·6	0·3	0·5	20·3	22
37 to 38 weeks ..	0·4	0·9	2·9	2·9	0·2	1·3	1·9	0·3	2·3	1·5	1·5	0·6	0·1	0·3	17·1	17
L.W...	0·5	0·7	3·2	3·2	0·2	1·6	2·1	0·5	2·7	1·8	1·9	0·6	0·2	0·2	19·4	21

[1] All figures are arbitrary units.

[2] "A"=As yet an unidentified spot.

[3] Basic amino acids—arginine and lysine.

[4] *Et cetera* includes methionine, phenyl alanine, leucines, tryptophane and tyrosine.

[5] L.W.=On admission to labour ward service.

TABLE II.

Amino Acids in Serum.[1]

Subjects.	Aspartic Acid.	Glutamic Acid.	Glycine.	Serine.	Taurine.	Threonine.	Alanine.	Valine.	Glutamine.	Histidine.	*Et cetera.*[2]	Total.	Number of Cases.
Normal Pregnancy.													
Non-pregnant	0·5	1·3	1·6	1·8	0·8	0·1	2·8	0·9	2·7	0·4	0·2	13·1	17
Before 25 weeks	0·8	1·5	1·1	1·1	0·4	0·2	1·8	0·5	2·3	0·5	0·2	10·4	58
25 to 30 weeks	0·6	1·4	0·7	1·0	0·2	0·5	1·8	0·3	1·8	0·7	0·1	9·1	36
31 to 34 weeks	0·7	1·3	0·7	0·9	0·1	0·4	1·7	0·3	1·8	0·6	0·1	8·6	59
35 to 36 weeks	0·6	1·4	0·5	0·8	0·2	0·3	1·7	0·3	1·7	0·5	0·0	8·0	44
37 to 38 weeks	0·7	1·6	0·6	0·9	0·2	0·2	1·5	0·3	1·9	0·6	0·0	8·4	41
L.W.[3]	0·8	2·6	0·7	1·2	0·3	0·3	1·9	0·5	2·0	0·4	0·1	10·8	48
Six weeks *post partum* ..	0·8	3·0	0·8	1·3	0·4	0·4	1·7	0·6	2·5	0·6	0·3	12·4	7
Normal Pregnancy (Previously Toxæmic).													
Non-pregnant	—	—	—	—	—	—	—	—	—	—	—	—	—
Before 25 weeks	0·6	1·7	1·4	1·0	0·4	0·2	1·4	0·6	1·9	0·7	0·1	10·0	17
25 to 30 weeks	0·6	1·3	0·6	0·8	0·1	0·3	1·2	0·3	1·7	0·5	0·1	7·5	12
31 to 34 weeks	0·7	1·5	0·7	1·0	0·2	0·5	1·6	0·4	1·6	0·6	0·3	9·2	19
35 to 36 weeks	0·6	1·4	0·5	0·7	0·2	0·4	1·5	0·5	1·7	0·6	0·1	8·2	15
37 to 38 weeks	0·7	1·4	0·5	0·7	0·0	0·3	1·7	0·4	1·5	0·4	0·0	7·6	9
L.W.[3]	0·9	2·6	0·8	1·4	0·2	0·5	1·8	0·7	1·7	0·5	0·0	11·1	12
Six weeks *post partum* ..	1·0	3·0	1·0	1·0	1·0	0·5	3·0	1·0	2·0	0·5	0·0	14·0	1
Toxæmic Pregnancy (Current Pregnancy).													
Before 25 weeks	0·6	1·4	0·9	0·9	0·5	0·3	1·8	0·2	2·2	0·5	0·1	9·4	24
25 to 30 weeks	0·7	1·4	0·7	1·0	0·2	0·5	1·7	0·5	2·0	0·6	0·2	9·5	22
31 to 34 weeks	0·6	1·1	0·5	0·8	0·1	0·3	1·4	0·2	1·8	0·5	0·1	7·4	28
35 to 36 weeks	0·7	1·5	0·6	0·8	0·2	0·2	1·6	0·2	1·8	0·5	0·0	8·1	24
37 to 38 weeks	0·7	1·5	0·6	0·7	0·3	0·3	1·5	0·3	1·8	0·5	0·1	8·3	21
L.W.[3]	0·9	2·4	0·8	1·2	0·3	0·2	1·8	0·3	2·0	0·6	0·0	10·5	20
Six weeks *post partum* ..	0·8	3·0	0·6	1·2	0·6	0·1	2·1	0·8	2·8	0·7	0·0	12·7	5

[1] All figures are arbitrary units.

[2] *Et cetera* includes methionine, phenylalanine, leucines, tryptophane and tyrosine.

[3] L.W.=on admission to labour ward service.

TABLE III.

Mean Concentration of Proteins in Non-Pregnancy, Normal Pregnancy and Toxæmic Pregnancy.

Subjects.	Number of Cases.			α_1 Globulin. (Grammes per 100 Mils of Serum.)			α_2 Globulin. (Grammes per 100 Mils of Serum.)			β Globulin. (Grammes per 100 Mils of Serum.)			γ Globulin. (Grammes per 100 Mils of Serum.)			Total Globulin. (Grammes per 100 Mils of Serum.)			Albumin. (Grammes per 100 Mils of Serum.)			Total Serum Protein. (Grammes per 100 Mils of Serum.)			Albumin-Globulin Ratio.		
	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.	Normal Pregnancy.	Normal Previous Toxæmia.	Current Toxæmia.
Non-pregnant	19	—	—	0·232	—	—	0·458	—	—	0·603	—	—	1·019	—	—	2·313	—	—	4·903	—	—	7·216	—	—	2·167	—	—
Before 25 weeks	36	7	21	0·281	0·284	0·282	0·521	0·500	0·513	0·768	0·863	0·718	0·936	1·083	0·878	2·507	2·730	2·393	3·520	3·377	3·474	6·027	6·107	5·866	1·444	1·259	1·513
25 to 30 weeks	43	7	17	0·237	0·263	0·260	0·599	0·534	0·571	0·876	0·766	0·792	0·817	0·907	0·841	2·529	2·470	2·452	3·084	3·139	2·942[1]	5·613	5·609	5·394	1·264	1·320	1·269
31 to 34 weeks	63	9	33	0·262	0·259	0·282	0·604	0·591	0·562	0·856	0·922	0·901	0·812	0·866	0·836	2·536	2·638	2·582	2·958	2·988	2·821[1]	5·493	5·621	5·403	1·205	1·172	1·135[1]
35 to 36 weeks	35	8	20	0·290	0·319	0·341[1]	0·687	0·606	0·612	0·893	0·826	0·934	0·836	0·871	0·941[1]	2·707	2·623	2·827	2·938	2·993	2·793[1]	5·645	5·615	5·620	1·107	1·169	1·009[1]
37 to 38 weeks	31	8	13	0·308	0·364	0·349	0·655	0·658	0·690	0·907	0·975	0·992	0·837	0·914	0·848	2·708	2·910	2·900	2·875	2·998	2·651[1]	5·584	5·908	5·523	1·086	1·050	0·920[1]
In labour ward	48	7	20	0·324	0·319	0·373[1]	0·710	0·757	0·709	0·940	1·223	1·045	0·869	1·044	1·019[1]	2·843	3·343	3·114[1]	2·957	3·017	2·822[1]	5·800	6·360	5·953	1·061	0·941	0·932[1]
Six weeks *post partum*	4	1	4	0·215	0·290	0·288	0·558	0·400	0·645	0·818	0·730	0·790	0·970	1·260	0·923	2·560	2·680	2·645	3·575	4·178	4·178	6·135	7·080	6·823	1·440	1·640	1·605[1]

[1] Significantly different at the 5% level from the normal groups, and in the albumin-globulin ratio at the 1% level.

All the amino acids are expressed in arbitrary figures obtained by assigning a number to each spot on the chromatograms according to the depth of colour produced by ninhydrin.

Urine Amino Acids.

The totals of the amino acids in urine tend to show a slight rise during the third trimester of pregnancy. There appears to be no significant difference between the three groups. There is no conspicuous alteration in the excretion of any single amino acid during pregnancy (Table I).

Serum Amino Acids.

These show a tendency to fall about the same time as the urinary amino acids rise. Again there appears no difference in pattern in the three groups (Table II).

These alterations in urine and serum amino acids could be explained by a fall in renal threshold, as also occurs in the renal threshold for sugar during pregnancy. There is no evidence that the variations are in any way related to metabolic changes.

Serum Proteins.

The serum protein results have been statistically analysed and the normal and toxæmic groups compared at each stage by the usual *t* test. Those figures marked are significantly different at the 5% level from the normal groups, and in the albumin-globulin ratios at the 1% level (Table III).

The changes found in the serum proteins are more definite than those in amino acids and show a general fall in total serum protein throughout normal pregnancy, with partial recovery by the sixth week *post partum*.

The general fall is due largely to the fall in the serum albumin content and to a lesser extent in the γ globulin content, and is counteracted to some extent by an increase in the α_1, α_2 and β globulin contents. The fall in serum albumin content is not due solely to hæmodilution, since it also occurs when results are expressed per 100 grammes of serum protein.

In patients with current toxæmia these changes are significantly greater in the case of albumin and α_1 globulin and are significantly less in the case of γ globulin.

The patients who had previously been toxæmic, but were normal during this current pregnancy, do not differ significantly from the normal group, but the numbers examined were very small.

Summary.

1. Variations in urine and serum amino acid contents and in serum protein content have been studied during pregnancy in a group of South Australian women, normal non-pregnant women being used as controls.

2. Chromatography was used for the amino acid analysis and paper electrophoresis for the serum proteins.

3. The urine amino acid contents rose during the third trimester of both normal and toxæmic pregnancies.

4. The serum amino acid content fell during the third trimester of both normal and toxæmic pregnancies.

5. These alterations could have been due to a fall in renal threshold, as occurs in the case of sugar.

6. The total serum protein content fell in both normal and toxæmic pregnancies, and this is mainly accounted for by the fall in the albumin fraction. The albumin content showed a significantly greater fall in toxæmic than in normal pregnancies.

7. During normal pregnancy α_1, α_2 and β globulin contents increased in the serum and the γ globulin content fell. In toxæmic pregnancy the rise in α_1 globulin content was greater and the fall in γ globulin content less than in normal pregnancy.

Acknowledgements.

My thanks are due to the patients and staff of the Queen Victoria Maternity Hospital, Adelaide, for their cooperation in this lengthy study. I also wish to thank the other honorary medical officers who gave permission for their patients to be investigated.

SEPARATION OF PROTEINS IN BIOLOGICAL FLUIDS BY PAPER ELECTROPHORESIS.

By JOAN B. PATON, GWENDOLINE K. ROBERTSON[1] and MAURICE L. WELLBY.[1]

From the Institute of Medical and Veterinary Science, Adelaide.

THE separation of protein fractions in serum has always been a difficulty in routine clinical work, and the majority of laboratories employ tedious methods of fractional precipitation with various concentrations of salts to separate albumin from globulin. In addition, a number of different flocculation tests are in use to detect alterations in the γ-globulin fraction. Because these flocculation tests are also influenced by the proportion of albumin and other globulin fractions, interpretation has been on purely empirical grounds. Good separation of the various fractions has been obtained with electrophoresis, but the cost of the instrument and the amount of material required for analysis restrict its application to clinical biochemistry.

Unfortunately proteins do not readily separate on paper chromatograms, the use of which would in any case be limited because the proteins are readily soluble only in an aqueous medium. However, in 1950 Durrum showed that by applying an electric potential across the ends of strips of filter paper saturated with buffer, mixtures of proteins, peptides or amino acids could be separated into narrowly circumscribed areas. These proteins can be fixed on the paper by heat denaturation and then stained, or each band can be eluted and used for any other purpose. Further experiments showed that under these conditions the protein behaved as if it was in solution, and that the results were comparable with those of electrophoresis. This has been confirmed (with the exception of certain abnormal sera) by Levin and Oberholzer (1953), who also compare results of paper electrophoresis with those of salt precipitation. Because of the small quantities of material required and the simplicity of the apparatus, paper electrophoresis is obviously suited for routine clinical work and has been shown to give a clear differentiation between albumin and α_1, α_2, β and γ globulins.

Up to the present there have been few reports on the differences in protein fractions occurring in pathological conditions, other than those found in albumin and γ globulin. Those obtained by free electrophoresis have been summarized by Fisher (1953). The following paper reports some experience with the method of paper electrophoresis, and examples are given of variations in serum albumin and α_1, α_2, β and γ globulins in normal individuals and in people with various pathological conditions, and in urinary proteins.

TECHNIQUE AND METHODS.

Protein Separation.

A copy of the "Perspex" apparatus designed by Flynn and de Mayo (1951) was made, which allows nine paper strips measuring 36 by four centimetres to be run at the same time. Briefly, the protein-containing solution is placed along a band four millimetres wide in the centre of the paper at right angles to the length, and all the paper except the portion containing the protein is immediately saturated with "Veronal" buffer at pH 8·5 (1·84 grammes of diethyl barbituric acid and 10·3 grammes of sodium diethyl barbiturate in one litre of distilled water). The paper is placed in the apparatus and suspended at the centre by a thin "Perspex" strip. One end of the paper is dipped into a compartment containing buffer and the cathode, and the other into the compartment containing buffer and the anode. A potential of 135 volts (direct current) from dry batteries was applied for initial tests, but a better separation is obtained at 180 volts, and this has been used for the majority of the estimations. Both the anode and the cathode compartments are divided so that the carbon electrode is separated from the paper, pH changes at the electrodes thus being prevented from reaching the paper strips. Electrical contact is effected by small cotton wool wicks which dip into the buffer on either side of the dividing partition.

Runs of twenty hours' duration with 135 volts or of sixteen hours' duration with 180 volts are made, during which time the γ-globulin fraction remains stationary or moves towards the negative pole, and the albumin and other globulin fractions towards the positive pole at varying speeds. The actual distance moved by each fraction has been found to vary slightly with the external temperature; but this could probably be easily controlled by the use of a constant temperature cupboard. Experience has shown that freshly prepared buffer is necessary to allow clear separation, and that serum should not be allowed to dry out on the paper before being subjected to electrophoresis.

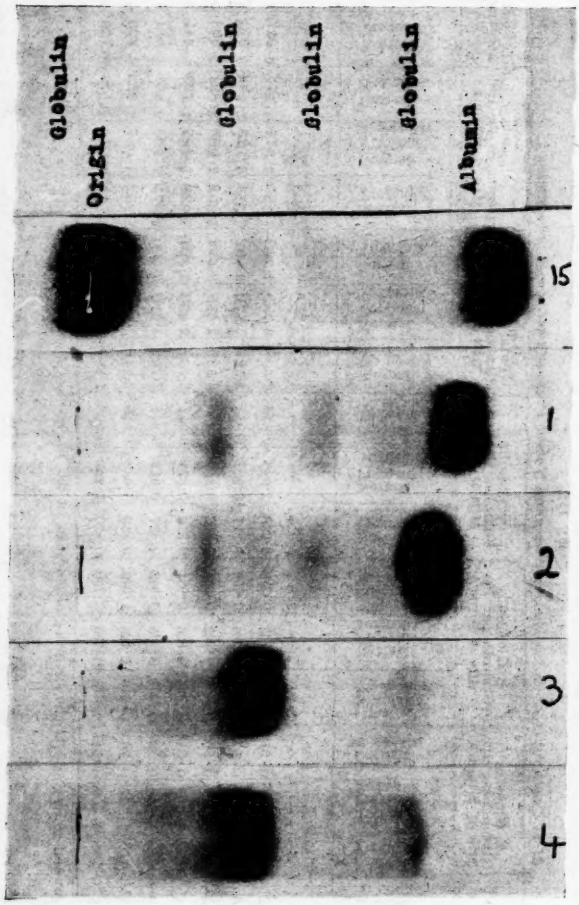

FIGURE IA.

Protein patterns obtained by paper electrophoresis and stained with bromphenol blue; 15, serum from a patient with multiple myeloma: 1, normal serum; 2, normal serum showing extra globulin band; 3, serum from a patient with lipoid nephrosis; 4, serum from the same patient with lipoid nephrosis, one month later.

For qualitative work Whatman number 1 filter paper with the use of 15 microlitres of serum is satisfactory, but if Whatman number 3 MM paper and 25 microlitres of serum or 50 or more microlitres of urine are used, a quantitative method is obtained. Munktell number 20

[1] Receiving a grant from the National Health and Medical Research Council.

paper is fairly satisfactory, but has not given as consistent results as Whatman number 3 MM. The use of plasma is unsatisfactory, as a certain proportion (presumably fibrinogen) remains at the origin, and separation of β and γ globulins is not as clear (see numbers 9 and 10 in Figure IB) as with corresponding sera.

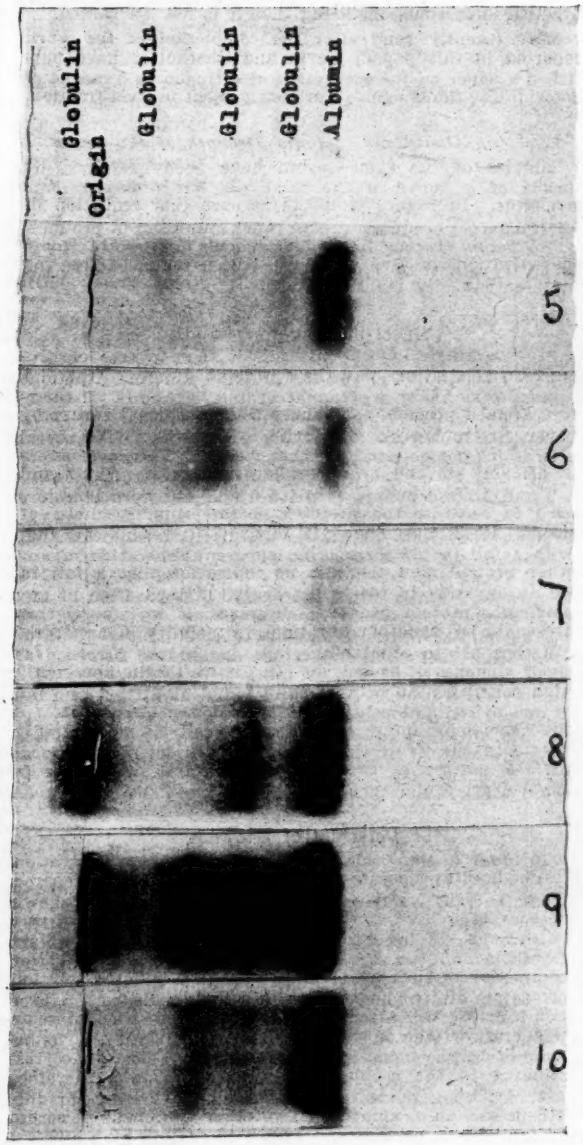

FIGURE IB.

Protein patterns obtained by paper electrophoresis and stained with bromphenol blue; 5, urine from a patient with lipoid nephrosis collected at the same time as the serum [4] in Figure IA; 6 and 7, serum and urine from the patient with lipoid nephrosis; 8, serum from a patient with disseminated *lupus erythematosus*; 9 and 10, plasma and serum from the same sample of blood.

Staining.

At the completion of the run the papers are dried and the protein is stained with bromphenol blue in ethanol (95%) saturated with mercuric chloride. Many other dyes and colour reagents (including bromthymol blue, phenol red, amido-schwarz, alkali blue, Victoria blue, flavianic acid, diazotized sulphanilic acid and Folin-Ciocalteu reagent) have been tried, but none of these proved as satisfactory as bromphenol blue.

Some difficulty was experienced in obtaining clear and permanently stained bands of protein when the pre-war sample of Merck's bromphenol blue had to be replaced by the British Drug Houses product. The washing technique was therefore altered and has now been standardized as follows:

Papers for staining are dried rapidly in front of radiators and stained with the 1% bromphenol blue in ethanol saturated with mercuric chloride by immersion in the dye for exactly ten minutes. Surplus dye is washed from the paper with

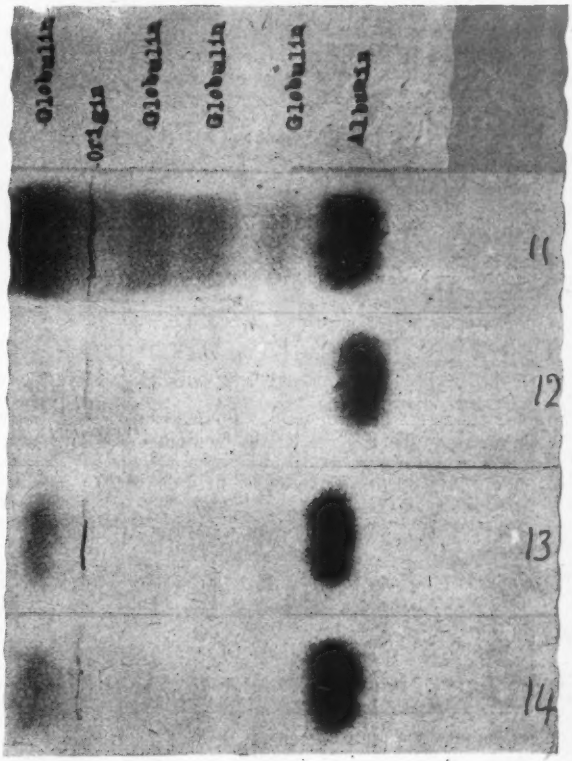

FIGURE IC.

Protein patterns obtained by paper electrophoresis and stained with bromphenol blue; 11, serum from a patient with a *hydatid cyst*; 12, serum from a patient with obstructive jaundice; 13, serum from a patient with glandular fever; 14, serum from a patient with infectious hepatitis.

slowly running distilled water (nine papers are washed with 20 litres of water over a period of one hour). The papers are then dried, washed three times with methanol (the last wash should be free from dye) and again dried.

This technique has been found to give clear differentiation of the protein bands and reproducible results after the elution of the dye. Protein patterns obtained with normal and some pathological sera are shown in the photographs (Figures IA, IB and IC).

Standardization.

The protein bands in the stained paper are cut out and the dye in each is eluted with 4% sodium carbonate solution in methanol (50%) volume for volume, and the colour is measured in a photo-electric colorimeter (a portion of the paper free of protein is used to prepare a blank). Standard solutions of varying concentrations of pure albumin and of γ globulin are prepared from dried

material obtained from the Lister Institute and run in a similar way, stained and eluted, and the colorimeter readings are plotted against concentration so that a factor for the conversion of dye to these protein fractions can be calculated. Since pure samples of α and β globulins have not been available, it has been assumed that the uptake of dye by them is the same as for γ globulin. With the standardized staining technique described, it has been found that the rate of uptake of the dye by albumin is about 1·3 times as great as that by γ globulin at normal serum levels, but at a concentration of 3% globulin or more it is higher. This factor is lower than that reported by

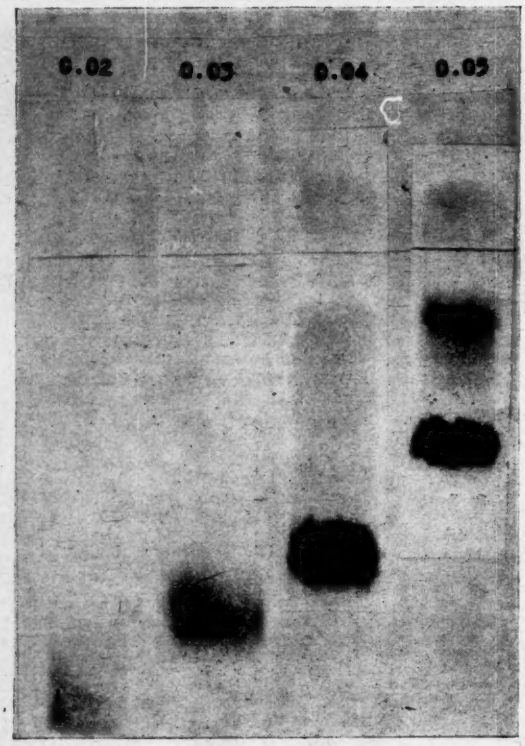

FIGURE II.

Effect of changing the ionic strength on the electrophoresis of serum proteins (pH 7·6).

Flynn and de Mayo, probably because of the longer time used for staining. The uptake of dye has also been found to vary with the pH of the buffer and its ionic strength; that is, for the estimation of protein present in each band standard curves for the uptake of dye by pure albumin and globulin run with the use of the same buffer must be prepared. From this an actual measure of the various protein fractions can be obtained for nine specimens of serum in approximately twenty hours.

Grassman and Hannig (1952) use a different method of determining the amount of protein in each fraction after staining with amido-schwarz 10B. The paper strips are made transparent by immersion in bromonaphthalene and paraffin, and the depth of colour is read by an adaptor to a photo-electric colorimeter with an automatic recording device. The results are then plotted as a curve. Facilities for trying this technique were not available, and it was thought that, because under the conditions of our experiments there was often some difference in the distance moved by each protein band, it would be difficult to compare results obtained from different runs. Furthermore, it appears that the uptake of amido-schwarz (which is not available in Australia) by protein is much greater than the uptake of bromphenol blue, so that thinner paper could be used. On the other hand, the use of the transparent strip probably gives a fairer separation of the different protein fractions than is obtained by the empirical cutting which we have used. This could be overcome by cutting each paper into a large number of equal strips, each of which was individually eluted. It is thought that such a practice is so time-consuming that it is not warranted.

More recently (and after the completion of the work reported in this paper) Levin and Oberholzer have published a paper on the estimation of nitrogen as a means of determining the amount of protein present in each fraction.

Effect of Alterations in Ionic Strength of the Buffer.

Samples of the same serum have been examined by means of a buffer of the same pH but different ionic strengths. In Figure II it can be seen that reduction in ionic strength produces a more rapid migration of proteins, which become rather diffuse and difficult to separate. Ionic concentrations of 0·05 to 0·1 have been found to give the most satisfactory results.

Effect of Alteration in pH.

In 1950 Miller *et alii* pointed out that in free electrophoretic separation of serum proteins different fractions tended to merge or separate according to the pH. It therefore seemed possible that analysis of abnormal serum by paper electrophoresis at varying pH values might reveal alterations not detected by other means. "Veronal" buffers of pH 9·1, 8·5 and 7·7, phosphate buffers of pH 7·3 and 6·0 and acetate buffers of pH 5·0 and 4·0 were therefore used to separate the proteins in the same specimen of serum. Results are shown in Figure III, and indicate that with a fall in pH there is no apparent separation of any other protein, and there is no indication that a fall in pH in any way increases the degree of separation of any particular protein fraction. However, it was found that use could be made of alterations in mobility in buffers of different pH to eliminate errors due to the presence of small amounts of hæmolysis. In Figure IV the apparently high concentration of β globulin found at pH 9·1 and 8·5 is due to contamination with hæmoglobin. Below pH 7·6 the hæmoglobin migrates towards the cathode more rapidly than β globulin. By estimating β and γ globulin values at pH 8·5 and 7·4 it is possible to correct the error due to small degrees of hæmolysis.

Detection of Enzymes.

In order to show that this method of protein separation can be used to separate enzymes, two papers were prepared from the same sample of a serum which had been shown to contain a high content of alkaline phosphatase. One paper was stained to show the position of the protein fractions and one was dried at room temperature after completion of electrophoresis, dipped in a buffered solution of sodium dinitrophenol phosphate, and incubated for three hours at 37° C. After the paper had been dried at room temperature (the substrate is unstable to heat), a yellow band of dinitrophenol could be detected in a position corresponding to the α_2 globulin fraction. It was therefore assumed that the alkaline phosphatase present in this serum was an α_2 globulin. Two other specimens of serum from different persons and known to contain high alkaline phosphatase titres (92 and 60 King–Armstrong units per 100 millilitres respectively) were also examined, and again the phosphatase activity was found to be concentrated in the α_2 globulin fraction.

Detection of Cholesterol in Globulins.

The concentration of cholesterol in the α_2, β and γ globulin fraction of serum proteins in three cases of nephritis associated with high blood cholesterol levels was shown by running duplicate papers for each specimen of serum. One paper from each specimen was stained, and from this the position of the protein fractions on the unstained paper was determined. The paper was then cut and the cholesterol in each fraction was eluted with

chloroform. The cholesterol content was then determined by the colour produced with acetic anhydride and concentrated sulphuric acid.

Material Required.

The materials required are as follows: a "Perspex" box, the approximate cost of which is £7/10/0; one gramme of bromphenol blue, which will stain approximately 50 papers; Whatman number 3 MM papers.

RESULTS.

During 1952 more than 500 specimens of serum were examined by paper electrophoresis. The majority of these have been for a special research project, the results of which are to be reported later. In addition, as many abnormal sera as possible have been examined so that some indication of the variations to be expected in disease could be obtained. Photographs of some of these are given in Figures IA, IB and IC.

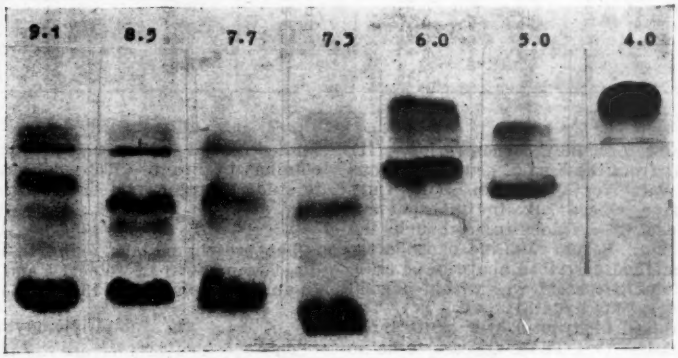

FIGURE III.

Effect of pH on the electrophoresis of serum proteins; ionic strength 0·1.

Normal Values.

Average values and the range for the various protein fractions obtained for normal individuals by this method are shown in Table I and a typical pattern is shown in Figure IA (number 1). They agree reasonably well with those values given by Lagercrantz (1945), by Coryell *et alii* (1950), and by others summarized by Grassman and Hannig (1952) and Levin and Oberholzer (1953), except that the proportion of albumin is a little high—that is, about 68% of total protein as compared with 58% to 63%. However, this is a relatively small difference, and may be due to such factors as diet (the average Australian consumes relatively large amounts of protein) and not necessarily to the method used.

Serum Protein Changes Occurring in Pregnancy.

This method has been used to follow the alteration in serum protein fractions which normally accompanies pregnancy, and the mean values obtained are recorded in Table I. These are similar to those found by Coryell *et alii* (1950) and by Macy and Mack (1952). The most conspicuous difference from normal non-pregnant serum is the fall in albumin level, which occurs in the second trimester and continues until delivery. It is not due solely to hæmodilution, since a fall also occurs when results are expressed per 100 grammes of serum protein. At the same time there is an absolute rise in all globulin fractions except γ globulin, the level of which falls. (It is of interest to compare these changes with those which occur in some cases of nephritis, in which low albumin values are associated with an increase in α_2 and β globulin, but with a fall in α_1 and γ globulin.) In those women who developed toxæmia there was in general an accentuation of these changes. A more complete analysis of the results from these experiments will be reported.

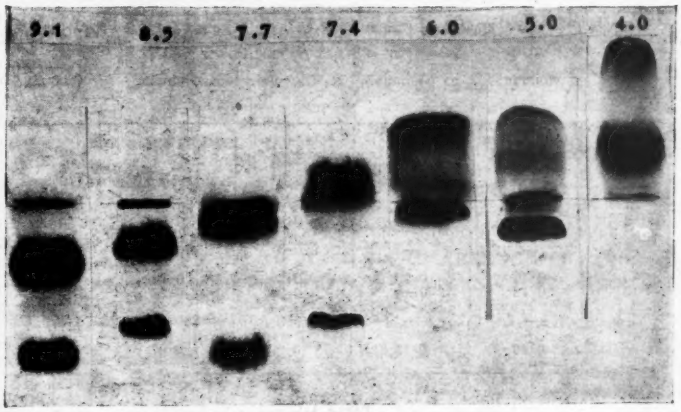

FIGURE IV.

Effect of pH on the migration of hæmoglobin; ionic strength 0·1.

Nephritis.

One of the most striking differences from the normal protein pattern is that found in those types of nephritis associated with albuminuria and a high serum cholesterol level. Examples of the protein pattern in serum and urine from two such cases are shown in the photograph in Figures IA and IB (numbers 3 to 7), and results from three cases are recorded in Table II. In two cases urine and ascitic fluid were also examined. The amount of protein in the specimens of ascitic fluid (25 and 50 milligrammes per 100 millilitres respectively) was insufficient to give a satisfactory pattern, but the protein pattern in the urine resembled the normal serum pattern far more closely than did the pattern in the corresponding serum. Duplicate papers were run with serum, and the cholesterol in the different fractions was estimated by the method described. As can be seen in Table II, the cholesterol was found in α_2, β and γ globulin fractions. The total cholesterol recovered was of the same order as that found for total serum cholesterol. Because of the very high concentration of α_2 globulin, and the difficulty of separating the three globulin fractions completely, the values obtained for cholesterol in each fraction are considered to be approximations. The highest ratio of cholesterol to protein was found in the β globulin fraction. The presence of cholesterol in these protein fractions raises the question of whether the increase in globulins allows the accumulation of the cholesterol, or whether an increased serum cholesterol content necessitates an increase in globulin.

Diseases of the Liver.

The serum protein patterns found in some cases of liver disease are shown in Figure IC (numbers 11, 12 and 14), and the values obtained are given in Table III together with values for alkaline phosphatase, the results of flocculation tests (cephalin–cholesterol and colloidal gold) and the icteric index.

The five cases studied cover a rather wide range of conditions, and it would be unwise to make a generalization from so few cases. Nevertheless, certain differences from normal are worth noting. Briefly these are as follows: (i)

TABLE I.
Serum Protein Content per 100 Millilitres of Serum in Normal Non-Pregnant and Pregnant Women.

Observation.	Number of Subjects.	Albumin.	α_1 Globulin.	α_2 Globulin.	β Globulin.	γ Globulin.	Total Protein.	Albumin-Globulin Ratio.
Non-pregnant range	19	4·0 to 5·3	0·12 to 0·30	0·28 to 0·62	0·44 to 0·93	0·67 to 1·55	6·2 to 8·3	1·7 to 2·8
Non-pregnant mean	—	4·9	0·23	0·46	0·60	1·02	7·2	2·12
Pregnancy before 25 weeks	36	3·5	0·28	0·52	0·77	0·94	6·0	1·44
Pregnancy 25 to 30 weeks	43	3·1	0·24	0·60	0·88	0·82	5·6	1·26
Pregnancy 31 to 34 weeks	63	3·0	0·26	0·60	0·86	0·81	5·5	1·20
Pregnancy 35 to 36 weeks	35	2·9	0·29	0·69	0·89	0·84	5·6	1·11
Pregnancy 37 to 38 weeks	31	2·9	0·31	0·66	0·91	0·84	5·6	1·10
Six weeks *post partum* ..	4	3·6	0·21	0·56	0·82	0·97	6·1	1·44
Non-pregnant serum showing extra protein band.	—	4·7	0·30	0·40	{0·3[1] / 0·82}	1·05	7·6	1·64

[1] Extra globulin band.

All specimens show a lowered albumin concentration. (ii) All specimens except that from the case of acute infectious hepatitis show a raised value for α_1 globulin. (iii) Only those specimens having a raised alkaline phosphatase content show an increase in α_2 globulin, although the increase is not proportional. Serum alkaline phosphatase has been shown by the method described above to be an α_2 globulin. (iv) The β globulin content was within normal limits except in the case of hydatid cyst. (v) The γ globulin content was raised in hydatid cyst, acute infectious hepatitis and cirrhosis. (vi) There appears to be no consistent relationship between the production of a positive response to the flocculation test and an altered protein pattern. It has always been assumed that positive responses to the flocculation tests are largely due to an increase in γ globulin, although influenced by alterations in other globulin fractions. Yet in the case of hydatid cyst only weakly positive flocculation test results were obtained, although the γ globulin level was particularly high.

It is thought that these few examples demonstrate the probable value of this method as a routine procedure in the clinical laboratory, and it is hoped that at a later date a large number of cases of liver damage will be examined. These results agree reasonably well with the results obtained by Brante (1952), who used paper electrophoresis to study a larger number of cases of liver dysfunction.

Miscellaneous Diseases.

The protein pattern found in a group of miscellaneous diseases is given in Table IV and demonstrated in Figures Ib and Ic (numbers 8, 13 and 15).

Multiple Myeloma.

The spectacular increase in the γ globulin content in serum from some cases of multiple myeloma is well shown in Figure I (number 15) and Table III. In this case other globulin fractions were within normal limits, but the albumin content was low. Where Bence Jones proteinuria accompanies this disease, its presence in urine can readily be distinguished from albuminuria, because the protein behaves like γ globulin.

Disseminated Lupus Erythematosus.

Specimens from two patients suffering from disseminated *lupus erythematosus* were examined. In the first case the α_1, α_2 and β globulin contents were considerably raised, but in the second case, in which the patient had been under

TABLE II.
Serum Protein and Cholesterol Contents and Urinary Protein Content in Nephritis.

Substance.	Case Number.	Albumin.	α_1 Globulin.	α_2 Globulin.	β Globulin.	γ Globulin.	Total Protein.	Albumin-Globulin Ratio.
Protein (grammes per 100 mils)	1	0·54	0·28	2·34	0·97	0·78	4·91	0·12
Cholesterol (milligrammes per 100 mils)	—	—	—	125·0	140·0	170·0	—	—
Urinary protein (grammes per 100 mils)	—	1·95	0·50	0·40	0·57	0·60	4·02	0·94
Protein (grammes per 100 mils)	2	0·54	0·06	0·81	0·50	0·24	2·1	0·34
Cholesterol (milligrammes per 100 mils)	—	—	—	220·0	370·0	120·0	—	—
Urinary protein (grammes per 100 mils) ..	—	0·40	0·20	0·25	0·20	0·30	1·35	0·42
Protein (grammes per 100 mils)	3	0·42	0·18	0·94	0·38	0·32	2·24	0·23
Cholesterol (milligrammes per 100 mils)	—	—	—	250·0	260·0	140·0	—	—
Urinary protein (grammes per 100 mils)	—	0·49	0·11	0·09	0·07	0·09	0·85	1·36

TABLE III.
Serum Protein and Liver Function Tests in Diseases of the Liver.

Clinical Condition.	Case Number.	Grammes per 100 Millilitres of Serum.						Flocculation Test Results.	Serum Phosphatase Content. (King-Armstrong Units per 100 Mils.)	Icteric Index.
		Albumin.	α_1 Globulin.	α_2 Globulin.	β Globulin.	γ Globulin.	Total Protein.			
Hydatid cyst	4	3·1	0·9	1·8	2·1	4·7	12·6	Weakly positive.	45	60
Infectious hepatitis ..	5	3·1	0·25	0·4	0·65	2·5	6·9	Strongly positive.	17	30
Chronic infectious hepatitis	6	3·0	0·46	0·46	0·62	1·1	5·7	Strongly positive.	8	4
Obstructive jaundice ..	7	2·9	0·35	0·8	0·9	1·4	6·4	Negative.	64	100
Obstructive jaundice ..	8	2·0	0·56	0·72	0·53	1·02	4·83	Negative.	35	80
Cirrhosis	9	2·0	0·4	0·4	0·52	2·0	5·3	Strongly positive.	15	20

TABLE IV.
Serum Protein Content in Some Diseases.

Clinical Condition.	Case Number.	Grammes per 100 Millilitres of Serum.					
		Albumin.	α_1 Globulin.	α_2 Globulin.	β Globulin.	γ Globulin.	Total Protein.
Multiple myeloma	10	2·2	0·32	0·60	0·61	4·9	8·6
Disseminated *lupus erythematosus*	11	4·1	0·62	2·60	0·90	3·8	12·0
Disseminated *lupus erythematosus* under treatment	12	1·2	0·20	0·70	0·60	1·5	4·2
Glandular fever	13	3·2	0·47	0·70	0·80	2·9	8·1
Poliomyelitis (23 cases):							
Range		3·0 to 6·7	0·42 to 0·97	0·37 to 1·63	0·54 to 1·47	0·87 to 2·1	6·4 to 9·8
Mean		3·93	0·57	0·81	0·80	1·24	7·35

treatment for some months, α_2 globulin was the only abnormal globulin fraction, though the albumin content was greatly reduced.

Glandular Fever.

In a case of glandular fever there was a raised concentration of α_1, α_2 and γ globulins (see Figure Ic, number 13, and Table III).

Poliomyelitis.

Examination by chemical methods of serum from a group of patients suffering from poliomyelitis suggested that the albumin-globulin ratio tended to be near the upper limits of normal. A number of specimens of serum from patients with poliomyelitis were therefore examined by paper electrophoresis. The group included patients of a wide range of ages (some children), and specimens were collected from both mildly and severely affected subjects, usually within a week of the onset of the disease. As a whole, the group examined showed a consistent increase in the serum α_1 and α_2 globulin contents. There was no indication of the alteration in β globulin content detected by free electrophoresis in many cases of poliomyelitis, and referred to by Fisher (1953). Some of the high values obtained for other fractions appeared to be due to dehydration. Since the usual chemical method of assay does not separate α globulin and albumin (Peterman *et alii*, 1947) an increase in α globulin content in the presence of a normal albumin content may account for a relatively high albumin-globulin ratio.

Detection of Fifth Globulin Band.

Occasionally an extra protein band lying between α_2 and β globulin has been detected. The band has been found in serum from normal women and during pregnancy, but is not consistently present in the same individual. The extra band could be detected in either phosphate or "Veronal" buffer, and occurred in concentrations of approximately 0·3 gramme *per centum*. An example of this pattern is shown in Figure Ia, number 2, and typical values for the various fractions are shown in Table I. Up to the present the band has not been detected in serum from men, but as only a few males have been examined this is not conclusive. Such a band from normal serum has been mentioned by Kunkel and Tiselius (1952), but has not been reported by other workers, and the possibility that it is an artifact must be considered, though other sera run at the same time have given normal patterns, and the extra band has been found when different buffers have been used.

Summary.

Details are given of a quantitative method of paper electrophoresis, which provides a clear separation of albumin and α_1, α_2, β and γ globulin in 25 microlitres of serum. The method has also been used with other protein-containing biological fluids, to demonstrate the phosphatase activity of serum α_2 globulin and the cholesterol-carrying capacity of certain serum globulin fractions. It is rapid, simple and inexpensive, and particularly suitable for routine clinical use. Examples of the results obtained with normal and some abnormal sera are given.

Acknowledgement.

We wish to thank the Lister Institute for the gift of albumin and γ globulin.

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THE ABSENCE OF MURRAY VALLEY ENCEPHALITIS VIRUS FROM THE MURRAY VALLEY, 1952–1953.

By S. G. ANDERSON, J. WHITE AND D. M. MCLEAN.

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SINCE the outbreak of Murray Valley encephalitis (MVE) in the Murray Valley early in 1951, a watch has been maintained for the recurrence of the disease in south-eastern Australia, particularly in the vicinity of Mildura. The techniques used have been described earlier (Donnelley and French, 1953; Anderson, 1953). They involved the estimation of complement fixing and neutralizing antibody to MVE virus in human and avian sera.

During the period from November 1, 1952, to April 30, 1953, sera were sent to this laboratory from 25 patients in northern Victoria clinically diagnosed as suffering from

encephalitis. We also received sera from 20 such patients in New South Wales and from 15 patients in Queensland. None of the sera carried complement-fixing antibody to MVE virus.

During April, 1953, 116 healthy adults in the Mildura district in north-western Victoria provided serum. None of the 116 sera carried complement-fixing antibody to MVE virus at a titre greater than 1:40, and only four at a titre of 1:20 or greater. Neutralizing antibody was also detected in the four with a complement-fixing titre of between 1:20 and 1:40. It is believed that the donors of these "positive" sera had been infected by the virus prior to the summer of 1952-1953 and probably during the epidemic of early 1951.

Again during April, 1953, blood samples were obtained from 75 domestic chickens, aged between six and twelve months, housed at Mildura within a quarter of a mile of the banks of the Murray River. None carried neutralizing antibody to MVE virus.

During March and April, 1953, serum was obtained from healthy adults in a number of towns in northern Victoria. These sera were made available by the Victorian Division of the Australian Red Cross Blood Transfusion Service. Of the 179 sera only one carried significant complement-fixing antibody to MVE, and that was at the low titre of 1:24.

We conclude that the virus of MVE did not spread in the Murray Valley during the summer of 1952-1953. This finding amplifies the concept previously expressed, that between the rare outbreaks of MVE in south-eastern Australia this virus completely disappears from that region.

Both Anderson and Eagle, and Miles and Howes have discussed climatic factors which are probably responsible for the occasional southerly spread of MVE virus into and through the Murray Valley. Miles and Howes pointed out that during the epidemic years—that is, during 1916-1917, 1917-1918, 1924-1925 and 1950-1951—at least 21 of the 23 rainfall districts in Queensland, the Northern Territory and the northern part of South Australia recorded a spring-summer rainfall of over 110% of normal. During the six months from August 1, 1952, to January 31, 1953, only 14 of the 23 districts recorded a rainfall greater than 110% of normal.

Anderson and Eagle suggested that a southerly epidemic spread of MVE virus to the Murray Valley occurred only when the preceding November rainfall in the Darling River watershed was more than 200% of normal. The figure for November, 1952, was 36% of normal. We believe, therefore, that the rainfall figures did not suggest that an outbreak of MVE would occur in the Murray Valley during the summer of 1952-1953.

Summary.

Serum from 320 humans and 75 domestic chickens has been obtained in northern Victoria, particularly from Mildura, during April, 1953. No high titre complement-fixing antibody to MVE virus was detected in the human sera, and no neutralizing antibody was present in the avian sera. It was concluded that the virus of MVE had not spread in the Murray Valley during the summer of 1952-1953.

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THE PATHOGENESIS OF PERNICIOUS ANÆMIA.

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A MACROCYTIC ANÆMIA may be defined as one in which the mean corpuscular volume is greater than 95 cubic μ. There are numerous macrocytic anæmias, and they may be subdivided into two main groups—those in which the bone marrow is megaloblastic and those in which the marrow is normoblastic. In this paper, the pathogenesis of the megaloblastic anæmias will be discussed, with particular reference to pernicious anæmia.

This disease was first described in Edinburgh in 1882 by Combe. Then followed Addison's classic descriptions in 1849 and 1855, and the disease was widely publicized by Biermer in 1871.

It was not long before the association between pernicious anæmia and gastric atrophy was noticed. Fenwick (1880) was not far from the truth when he suggested that the anæmia was produced by interference with nutrition, owing to the impaired digestive powers of the stomach. However, a few years later the rise of bacteriology gave rise also to misleading ideas, and it was soon believed that the anæmia was due to a toxin of bacterial origin arising from the intestines (Haden, 1948). This toxin was believed to enter the portal blood-stream and destroy red cells. These views persisted until quite recent times. It is interesting to quote from Osler and McRae's "Principles and Practice of Medicine", published in 1920. Pernicious anæmia is described as "a recurring and usually fatal anæmia caused by hæmolytic agents and characterised by an embryonic type of erythropoiesis. . . . The cause remains obscure, the nature and origin of the hæmolysis are unknown. . . . Hæmolytic bodies have been extracted from the intestinal mucosa, but it has not been shown that they are specific. Oral sepsis and intestinal toxæmia have been brought forward and supported by many arguments, but there must be something in addition. *Naturally in the present endocrine craze hypersplenism has been invoked.* . . . We have not got much beyond the position of Addison, who characterised the disease which he was describing as 'A general anæmia occurring without any discoverable cause whatever; cases in which there had been no previous loss of blood, no existing diarrhœa, no chlorosis, no purpura, no renal, splenic, myasmatic, glandular, strumous, or malignant disease' ".

This depressing picture was soon to be dramatically altered.

In various experiments commencing in 1920, Whipple and Robscheit-Robbins (1925) showed that blood regeneration following hæmorrhage in dogs was accelerated by a diet containing certain protein foods, particularly liver.

Minot and Murphy, in 1926, employed a similar diet in the treatment of patients with pernicious anæmia. They were greatly impressed by the striking improvement that occurred in their patients, and it was soon found that complete remissions could be produced by the administration of large amounts of liver by mouth.

This remarkable discovery completely altered the understanding of the nature of the disease. It was now obvious that pernicious anæmia was a deficiency disease, caused by lack of some substance present in liver.

The next problem was to explain the deficiency of this substance in patients with pernicious anæmia. The answer was provided by Castle (1929) in a series of classical experiments. In endeavouring to try the effect of normal peptic digestion on subjects with pernicious anæmia, he administered a mixture of beef muscle and normal gastric juice to these patients through a gastric tube. In practically every patient a good reticulocyte response followed. The administration of beef muscle and normal gastric juice separately was without effect. It was also found that the mixture of beef muscle with gastric juice from patients with pernicious anæmia was ineffective.

These experiments showed the existence of two substances, an extrinsic factor in beef muscle and an intrinsic factor present in normal gastric juice, and these substances, although separately ineffective, combined to form a hæmatopoietic factor that caused rapid improvement in pernicious anæmia. The experiments also clearly showed the absence of the intrinsic factor in pernicious anæmia, and its absence could be due only to the atrophy of the stomach in that disease. Further experiments showed that the intrinsic factor was distinct and different from pepsin, rennin and hydrochloric acid (Castle *et alii*, 1930).

It was now believed that the hæmatopoietic principle was stored in the liver. Wilkinson and Klein, in 1934, demonstrated the presence of the hæmatopoietic principle in normal human liver, and its absence from the liver of persons with pernicious anæmia in relapse. These workers prepared extracts of normal human liver and of liver from patients who had died from untreated pernicious anæmia. By injecting these extracts into patients with pernicious anæmia they were able to demonstrate a good response in the case of normal liver, whereas no response occurred when liver from patients with untreated pernicious anæmia was injected.

The early liver extracts were crude and somewhat variable in their effect. After some years, refined extracts of high potency were prepared. These extracts were very effective in pernicious anæmia. However, it was noticed that they were much less effective in nutritional macrocytic anæmia and in the anæmia of sprue. Some patients responded fairly well to refined extracts, but others were improved by crude extracts when the refined preparations had failed. Wills and Evans, in 1938, postulated the existence of another hæmatopoietic substance in crude liver and yeast, but not in refined liver extracts, and suggested that lack of this substance was responsible for their cases of tropical macrocytic anæmia.

Microbiological studies led to the next big advance in our understanding of megaloblastic anæmias. Beginning in 1941, a group of investigators at the Lederle laboratories discovered the presence in liver, yeast, spinach and grasses of a substance that is necessary for the growth of the *Lactobacillus casei* and of the *Streptococcus fæcalis* R. This substance, which has been known as the *Lactobacillus casei* factor, or folic acid, was isolated and crystallized in 1943 and was synthesized two years later. The structural formula was announced in 1946 as pteroylglutamic acid (Meyer, 1947).

During this period another group of investigators showed that the hæmatological changes (anæmia and leucopenia) which developed in rats maintained on a synthetic diet with the addition of various sulphonamide compounds could be prevented or cured if the animals received folic acid. Similarly, the anæmia and other lesions which developed in monkeys having a vitamin-deficient diet could be entirely relieved by the administration of folic acid (Meyer, 1947).

Folic acid was soon used in the treatment of the megaloblastic anæmias, with very successful results. Numerous reports showed the efficacy of this substance in pernicious anæmia (Meyer, 1947), in nutritional macrocytic anæmia (Girdwood, 1951), in pernicious anæmia of pregnancy (Girdwood, 1951), and in refractory megaloblastic anæmia (Davidson, 1948). Excellent hæmatological responses occurred in all these conditions. However, it was noticed after a time that patients with pernicious anæmia tended to relapse (Girdwood, 1951). In addition, this substance failed to prevent the development of progress of subacute combined degeneration. In some cases, an alarming progress in neurological signs occurred while the patient was receiving folic acid, with regression of the condition when the drug was suspended. These clinical observations made it apparent that folic acid is certainly not the factor that is missing in subacute combined degeneration. Various mechanisms were offered in an attempt to explain these phenomena. Ross and his associates (1948) pointed out that folic acid, or pteroylglutamic acid, is closely related to glutamic acid. It is believed that glutamic acid is the only amino acid that can be metabolized by the central nervous system. Its therapeutic use in this connexion in cases of hepatic coma has recently been reported (Walshe, 1953). Ross postulated that pteroylglutamic acid blocked the metabolism of glutamic acid, in view of its chemical similarity to the latter, and thereby produced neurological lesions. Davidson and Girdwood (1948) offered as an alternative explanation the knowledge that, when several vitamins are deficient and one is supplied, the depletion of the others is aggravated. This is well known in connexion with deficiencies of the vitamin *B* group.

In the meantime, two groups of investigators set out independently to isolate the anti-pernicious anæmia factor from liver. Rickes and his associates (1948) in the United States employed microbiological methods, whereas Lester Smith (1948) in England made use of the new technique of partition chromatography. Both investigators simultaneously isolated and crystallized a reddish-coloured, cobalt-containing compound which was extremely potent in the treatment of pernicious anæmia. This substance was given the name of vitamin B_{12}. Rickes and his associates found that it was necessary for the growth of *Lactobacillus lactis* Dorner, and microbiological assays of vitamin B_{12} by means of this organism have been successfully employed by many workers.

The therapeutic use of vitamin B_{12} when given parenterally to patients with pernicious anæmia and subacute combined degeneration has been most striking. Ungley (1949*b*) has in fact shown that it is at least as effective as liver in treating subacute combined degeneration, and that there is no need to postulate a deficiency of any neuropoietic factor other than vitamin B_{12}.

The discovery that vitamin B_{12} was the active component of liver immediately opened the question of its relationship to the extrinsic and intrinsic factors. Berk, Castle and their associates (1948) repeated the original experiments of Castle, substituting vitamin B_{12} for the beef muscle used in the early experiments. They found that, if vitamin B_{12} was given by mouth in doses effective when given parenterally, no hæmatological response occurred unless normal gastric juice was given simultaneously. They concluded from their experiments that vitamin B_{12} was the extrinsic factor, and that it was rendered absorbable by the intrinsic factor present in normal gastric juice.

Intrinsic factor had previously been shown to be inert when injected intravenously (Heinle and Miller, 1939). Castle and his associates, however, found that the intravenous injection of extrinsic factor produced a small but definite therapeutic response, corresponding approximately to the amount of vitamin B_{12} present in the extract (Gardner *et alii*, 1949). This provides further evidence that the extrinsic factor is identical with, or closely related to, the active hæmatopoietic substance.

When large amounts of vitamin B_{12} are given by mouth, some direct absorption can take place by mass action in the absence of the intrinsic factor. This was shown by Ungley (1950), who gave oral doses of 3000 microgrammes of vitamin B_{12} to patients with pernicious anæmia; this produced a good response. Absorption of vitamin B_{12} by mass action is the probable explanation of the beneficial effect of eating large amounts of liver, as was customary before parenteral liver therapy was introduced. However, some effect must have resulted from the additional presence of traces of folic acid, which is found in very small amounts in whole liver and in crude extracts.

Vitamin B_{12} is present in only small quantities in the food. However, considerable quantities are present in the fæces, both in health and in pernicious anæmia (Girdwood, 1950). Bethell, in fact, produced hæmatological responses in two patients with pernicious anæmia by injecting them with an extract made from the fæces of other untreated patients with pernicious anæmia (Girdwood, 1950). Girdwood found that large amounts of both folic acid and vitamin B_{12} were formed in the large intestine in normal subjects and in cases of pernicious anæmia. It is probable that these substances are synthesized by the intestinal bacteria. These observations are very interesting, and it is

paradoxical that patients with untreated pernicious anæmia should develop the disease in spite of the synthesis of large quantities of these therapeutically potent substances in the large intestine. This can be explained by the poor absorptive capacity of the large intestine. Moore (1950) has shown that, although folic acid can give a hæmatological response when administered by enema, the effective dose is at least 10 times that required when folic acid is given by mouth. With regard to vitamin B_{12}, there is no evidence of any absorption from the large bowel. It is believed that the intestinal mucosa, except for that of the duodenum (Hall *et alii*, 1950), contains virtually no intrinsic factor (Dexter *et alii*, 1939). However, the addition of intrinsic factor does not cause absorption of vitamin B_{12} from the colon. Davidson and Girdwood gave a patient a daily enema consisting of 100 cubic centimetres of gastric juice together with 25 microgrammes of vitamin B_{12} without any response, although the same material produced a prompt response when given by mouth (Girdwood, 1950).

Much work has been undertaken on the interrelationship of vitamin B_{12} and folic acid and their respective places in the prevention of megaloblastic anæmias. No definite answer has been given to this problem.

One theory has been that vitamin B_{12} liberates folic acid from its naturally occurring conjugates, which are present in food, and which are therapeutically inactive (Girdwood, 1951). This change was assumed to take place in the body, since vitamin B_{12} has to be absorbed to be effective.

This theory was based on the observation by Bethell and his associates (1947) that normal persons to whom this naturally occurring conjugate is given are able to excrete it as free folic acid in the urine, whereas persons with pernicious anæmia are unable to do so. However, the same authors have demonstrated the existence of conjugase inhibitors, which one cannot readily separate from the naturally occurring conjugates of folic acid, and this discovery makes the interpretation of experiments of this type rather difficult.

The theory has been modified by the discovery that liver contains another substance known as folinic acid or citrovorum factor, which has been shown to be effective in the treatment of pernicious anæmia (Davidson and Girdwood, 1951). This new factor is necessary for the growth of a streptococcus known as *Leuconostoc citrovorum*, and it is chemically related to folic acid. Both folinic acid and folic acid are present in refined liver extracts in minute quantities (0·2 to 0·5 microgramme), whereas the therapeutically active dose is measured in milligrammes (Girdwood, 1951). It has been shown in animal experiments that folic acid is transformed in the body into folinic acid (Nichol and Welch, 1950), and the suggestion has been made that folinic acid is the active hæmatopoietic substance that prevents megaloblastic anæmia.

The second theory, which has been described by Vilter and his associates (1950), suggests that nucleoprotein is synthesized in a chemical chain reaction catalysed by folinic acid and by vitamin B_{12}.

Before describing this theory it is necessary to outline briefly the composition of nucleoprotein in health and in pernicious anæmia. Nucleoprotein consists of a protein component combined with nucleic acid, which is a polymerized compound containing pentose, phosphoric acid, purine and pyrimidine bases. Nucleic acid exists in two forms, ribonucleic acid and desoxyribonucleic acid. The main difference between these substances is that ribose is the pentose component of the former, while desoxyribose occurs in the latter compound. The other important difference is that ribonucleic acid contains the pyrimidine base uracil, whereas desoxyribonucleic acid contains thymine (5 methyl-uracil) (Wintrobe, 1951).

Desoxyribonucleic acid occurs mainly in the chromatin of resting cells. Ribonucleic acid, on the other hand, occurs abundantly in immature cells, where it is situated mainly in the nucleolus and in the basophilic parts of the cytoplasm. Thorell (1947) has shown that, in the normally developing red cell, ribonucleic acid disappears rapidly when the synthesis of hæmoglobin commences. However, in pernicious anæmia, ribonucleic acid fails to disappear at the stage of hæmoglobin formation.

According to Vilter and his associates, both folic acid and vitamin B_{12} are intimately concerned in the synthesis of desoxyribonucleic acid. There is also some evidence that vitamin B_{12} is concerned in the production of ribonucleic acid. The details of the theory are as follows. The first step in the synthesis of desoxyribonucleic acid is the transformation of uracil into thymine, by the addition of methyl groups contributed by choline and methionine. This reaction is catalysed by folic acid or its derivative, folinic acid.

The next step is the combination of thymine with desoxyribose to form the nucleoside, thymidine. Vitamin B_{12} is necessary for this step.

The final stages are the formation of nucleotides and nucleic acid.

This theory is based mainly on bacteriological experiments, but there is some clinical evidence in support of it. Thymine is effective when given in large doses in pernicious anæmia (Spies *et alii*, 1946). Uracil is sometimes effective too, especially if choline and methionine are given concurrently with it (Vilter *et alii*, 1950). Clinical trials with thymidine, however, have given variable results. No therapeutic response was obtained in the cases investigated by Ungley (1949*a*) and by Reisner and West (1949). Hausmann (1951), however, obtained a satisfactory therapeutic response by using larger doses of thymidine.

Much additional therapeutic evidence will be necessary before this theory meets with general acceptance.

Another theory has been suggested by the work of Lajtha (1950), whose data have been obtained by tissue culture experiments with normal and megaloblastic bone marrow. Lajtha found that an inhibitor was present in the serum in pernicious anæmia, and that this inhibitor caused delay in the ripening of megaloblasts when cultured in pernicious anæmia serum *in vitro*. Similarly, when normal bone marrow was cultured in pernicious anæmia serum a certain proportion of megaloblasts developed.

It was found that this inhibitor could be overcome by folic acid (Lajtha, 1950) and folinic acid (Callender and Lajtha, 1951*b*) and also by liver extract, but not by crystalline vitamin B_{12}. However, when vitamin B_{12} was combined with neutralized gastric juice, the mixture was effective in ripening megaloblasts (Callender and Lajtha, 1951*a*).

Ternberg and Eakin (1949) have observed that incubation of vitamin B_{12} with gastric juice leads to its combination with a protein, the resulting compound being unavailable for the metabolism of bacteria which utilize vitamin B_{12}. These authors assumed that the protein which prevented the utilization of vitamin B_{12} was the intrinsic factor, and the compound formed by the combination of vitamin B_{12} with this protein was the anti-pernicious anæmia principle. Similarly, a compound of vitamin B_{12}, which is also microbiologically inactive, is present in normal serum. According to Callender and Lajtha (1951*a*), this represents the therapeutically active hæmatopoietic factors.

If crystalline vitamin B_{12} is given parenterally to a patient with pernicious anæmia, a therapeutic response occurs, in spite of the inefficacy of crystalline vitamin B_{12} in marrow culture. In addition, vitamin B_{12} appears in the serum in a combined form which is microbiologically inactive. Callender and Lajtha (1951*a*) explain this finding by postulating the existence of extragastic intrinsic factor, with which vitamin B_{12} must combine when given parenterally before the active hæmatopoietic factor can appear in the serum.

According to these workers, the function of the hæmatopoietic factor is to counteract the inhibitor, which is normally present. In untreated pernicious anæmia, the inhibitor can act unchecked and is detected by marrow culture. Normally, its action is suppressed by the hæmatopoietic factor, and this occurs also when vitamin B_{12} is

used therapeutically. Folic acid and folinic acid act in a different way, by overpowering the inhibitor in the plasma by mass action.

The existence of the inhibitor in pernicious anæmia has been confirmed (Thompson, 1950), although other points in the theory are still unproven. The correlation between microbiological inactivity and therapeutic activity of the combined forms of vitamin B_{12} has been shown in recent investigations to be without foundation (Prusoff *et alii*, 1953), and much work remains to be done on the various forms of vitamin B_{12} in the body. Lajtha and his colleagues have not yet been able, for technical reasons, to pursue their studies of the extragastic intrinsic factor (Lajtha, 1953); and the theory, although attractive, needs further confirmation before general acceptance is possible.

Another approach to the study of bone marrow cells is that employed by Horrigan, Jarrold and Vilter (1951). These authors injected folic acid, vitamin B_{12} and folinic acid directly into the marrow cavity of pernicious anæmia patients in relapse. Their findings were that vitamin B_{12} acted upon the marrow cells, whereas folic acid and folinic acid were inactive. These findings are opposite to those of Lajtha.

Conclusion.

The complexity of the subject has been briefly illustrated in this review. Megaloblastic anæmias are prevented by two substances, vitamin B_{12} and folic acid, both of which are necessary for the normal maturation of red cells. It is probable that folinic acid represents the active form of folic acid within the body. Vitamin B_{12} is identical with or closely related to the extrinsic factor, and is deficient in pernicious anæmia, because of the absence of the intrinsic factor. Folic acid is deficient in most of the other megaloblastic anæmias. When folic acid is used therapeutically in pernicious anæmia, its effect is produced by mass action, and it probably depletes the body still further of its scanty reserves of vitamin B_{12}. Several theories have been offered regarding the interrelation of these factors and their mode of action in the body, but the full explanation is not yet known.

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THE THIRD STAGE OF LABOUR AND POST-PARTUM HÆMORRHAGE, WITH OBSERVATIONS ON THE USE OF PITOCIN.

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Post-partum hæmorrhage is a rare cause of death in the larger obstetric hospitals today. However, it is still an important cause of maternal death. Thirty-one patients died from post-partum hæmorrhage in the metropolitan health district of Sydney between the years 1944 and 1949.

Greenhill (1952) states that hæmorrhage has assumed first place as a cause of maternal death in the United States, and every effort should be made to prevent blood loss.

Although death from post-partum hæmorrhage is rare in large institutions, hæmorrhage itself is common. Table I shows the incidence of post-partum (including third stage) hæmorhage in the Women's Hospital, Crown Street, Sydney, in the years from 1945 to 1953.

Table I.

Year.[1]	Total Number of Deliveries.	Number of Cases of Post-partum Hæmorrhage.[2]	Number of Cases of Manual Removal of Placenta.
1945–1946	3902	469 (12·0%)	64 (1·6%)
1946–1947	4780	290 (6·0%)	78 (1·2%)
1947–1948	5149	758 (14·0%)	75 (1·4%)
1948–1949	4819	350 (7·5%)	110 (2·2%)
1949–1950	4851	441 (9·0%)	194 (4·0%)
1950–1951	4556	465 (10·2%)	180 (3·9%)
1951–1952	4258	458 (10·7%)	217 (5·0%)
1952–1953	4592	274 (5·9%)	123 (2·6%)

[1] The blood loss before 1948 was estimated, but after 1948 accurate measurement was made.

[2] Total measured blood loss of 20 ounces (568 millilitres) or more.

In this series of 36,900 deliveries there was one death from post-partum hæmorrhage following a long second stage in a *primigravida*, with subsequent instrumental delivery.

Although there was only one fatal case of hæmorrhage in this series, there must have been a large number of non-fatal cases in which the patient was left temporarily or even permanently debilitated.

Let us consider the normal blood loss. Dieckman *et alii* (1947) state that most patients lose approximately 51 millilitres of blood with the placenta, and 73 millilitres after the placenta—a total of 124 millilitres (four ounces); if there has been an episiotomy or extensive laceration, they lose an additional 250 millilitres (nine ounces) or more, which makes a total of 370 millilitres (13 ounces) or more of blood lost in presumably normal deliveries (episiotomy). It is interesting to note that Odell and Seski found that the average loss from an episiotomy was from 16 to 57 millilitres per minute, the total average loss being 253 millilitres (nine ounces). A blood loss of 568 millilitres (20 ounces) or more from the genital tract during the third stage of labour or within twenty-four hours of its completion constitutes a post-partum hæmorrhage.

Prevention of Post-Partum Hæmorrhage.

Greenhill (1950) gave the following advice:

> First, last, and at all times, save blood. Do not waste blood because subconsciously you feel that you can replace the loss by transfusion.

The Causes of Post-partum Hæmorrhage.

The hæmorrhage may occur from (i) the placental site or (ii) lacerations to the birth canal.

The placental site is the common source of hæmorrhage, which may have any of the following causes.

The first cause is imperfect retraction of the uterus. This may be due to (*a*) retention of part or whole of the placenta or membranes, (*b*) uterine fibroid tumour, (*c*) *mismanagement of the third stage of labour*, or (*d*) uterine atony. This last condition may be a cause of hæmorrhage with the placenta still *in utero*, or after the separation and expulsion of the placenta. The predisposing causes of uterine atony are multiparity, debility of the mother, excessive sedation, prolonged general anæsthesia, over-distension of the uterus by twins or hydramnios, ante-partum hæmorrhage, prolonged labour or a full bladder.

The second cause of hæmorrhage may be an abnormal blood state—for example, thrombocytopenia.

Lacerations of the birth canal and neighbouring organs may affect the uterus, the cervix, the vagina, the vulva (episiotomy or tear), the bladder or the rectum.

It is readily appreciated that some of the predisposing causes of uterine atony can be prevented. The first important prophylactic step is to determine the patient's hæmoglobin value during pregnancy and to be certain that the patient commences labour with a high hæmoglobin value. All patients should also have their blood group and Rh factor determined during pregnancy.

If for any reason the labour is prolonged, the mother's strength must be maintained, and if, as occurs at times, an adequate fluid intake cannot be maintained by mouth, fluid should be given intravenously.

General anæsthesia for purposes of manipulation should not be unnecessarily prolonged. All preparation should be done before anæsthesia is commenced.

If any of the other predisposing causes are present, or if the mother has a history of previous post-partum hæmorrhages or manual removals, special care should be taken with the delivery. In all cases the baby should be delivered slowly. But it must always be remembered that one of the commonest causes of post-partum hæmorrhage is mismanagement of the third stage. Unnecessary kneading of the uterus or attempts to express an imperfectly separated placenta lead to irregular uterine contractions and hæmorrhage. Precipitate labour was not found to be a predisposing factor in hæmorrhage.

Treatment of Established Hæmorrhage.

Mayes (1950) emphasizes the old dictum: "An empty and contracted uterus will not bleed."

Early Manual Removal of the Placenta.

In 1947, Greenhill stated that he was of the opinion that Credé's manœuvre should be given up. This advice was followed in this hospital, as may be seen by the rise in the incidence of manual removal since that year. In the one fatal case of post-partum hæmorrhage in this hospital in the series of 36,900 deliveries, manual removal of the placenta was not resorted to until three unsuccessful attempts had been made to express the placenta by Credé's method and the patient had lost a considerable quantity of blood.

Manual removal of the placenta in the past has been criticized as a shocking and dangerous procedure. These claims have not been substantiated in this hospital; but if manual removal is kept as a last resort until the patient is extremely shocked from the combined effects of blood loss and repeated attempts at Credé's expression, it will undoubtedly be a dangerous procedure. It can be effectively carried out with the patient lightly anæsthetized by self-administration of "Trilene", with an assistant holding the legs. In fact, it has been used on occasions without the patient having any form of anæsthesia, and this was not found to produce shock.

The indications for manual removal of the placenta in this hospital are as follows. (i) Hæmorrhage—a blood loss of 300 millilitres (10 ounces) or more if the placenta has not separated, or if it has separated and cannot be expressed; (ii) retained placenta—if the placenta has been retained for one hour, without blood loss; (iii) prophylactic measures. An immediate manual removal of the placenta is performed in some cases in the following circumstances: (i) after severe ante-partum hæmorrhage in *placenta prævia*, when the placenta is situated in the lower uterine

segment which retracts poorly; (ii) after a difficult instrumental delivery or internal version, when the patient is deeply anæsthetized and bleeding is occurring, especially if the patient has a previous history of post-partum hæmorrhage or manual removal.

If bleeding is occurring, and if, for any reason, there will be a delay before manual removal can be performed, ergometrine (0·5 milligramme) should be given intravenously. This will help control the hæmorrhage in the interim.

The patient's general condition must now be attended to with morphine, possibly given intravenously, warmth, the intravenous administration of fluids, dextran or serum, to be followed by blood transfusion after the blood has been cross-matched with the patient's serum. Occasionally "Methedrine" (20 milligrammes given intravenously) will be helpful.

If the uterus is firmly contracted, the continuous loss of bright red blood indicates a cervical or vaginal laceration, so the birth canal must be inspected and the laceration repaired.

A hæmoglobin estimation should be performed on the second post-natal day; occasionally further transfusion may be found necessary.

The Risk of Endometritis.

Until the middle of 1952 it was customary to give all patients who had a manual removal of the placenta a prophylactic course of a sulphonamide or penicillin. Under this routine it was found that six of 194 patients who had a manual removal performed in the year 1949-1950 developed endometritis—an incidence of 3·5% compared with an incidence of 2·3% among the remainder of the patients delivered. In the series of 62 patients who have not had routine chemotherapy, only one has had a morbid puerperium. Provided reasonable aseptic precautions are taken, chemotherapy is unnecessary after manual removal of the placenta unless signs of sepsis develop.

PRESENT INVESTIGATION.

In spite of the foregoing measures, the post-partum hæmorrhage incidence has remained high. Although the use of oxytocics after the birth of the head and before the delivery of the placenta is not new, it has received considerable attention during recent years.

It was decided to conduct a series of deliveries with the use of an oxytocic drug, but without any major alteration in the labour ward routine of the hospital.

The standard routine is that patients are sedated with chloral hydrate, paraldehyde, barbiturates or pethidine during the first stage of labour, with self-administration of "Trilene" for the relief of pain. All normal confinements are conducted by a student or nurse under the supervision of a labour ward sister. A resident medical officer is present at all confinements of *primiparæ*, and administers a chloroform anæsthetic for the birth of the head and shoulders. The multiparous patients are delivered under light ether or "Trilene" anæsthesia; a student or nurse administers the anæsthetic by means of a Small's or Freedman's apparatus.

The Choice of Oxytocic.

Schild, Fitzpatrick and Nixon (1951) found that in patients whose pregnancies were being terminated in the first and second trimester, ergometrine seemed to have a greater tendency to cause contraction of the cervix than did "Pitocin". In their experiments they found that the cervix did not react consistently to "Pitocin". In some cases the cervix was contracted by "Pitocin", in others it did not respond, and in yet others it apparently relaxed.

Eastman (1950) makes the following statement:

> The response of the uterus to a solution of pitocin resembles that produced by ergometrine for the first five or ten minutes, but then normal rhythmic contractions of amplified degree return with intermittent periods of relaxation. This fundamental difference between the action of ergometrine and that of pituitary extract has most important clinical implications. Ergometrine administered before the delivery of the placenta may cause incarceration of that organ through tetanic uterine contraction, whereas pituitary extract given prior to placental expulsion produces a response which is characterised within a few minutes by periods of relaxation during which placenta can escape from the uterus.

The action commences within two minutes of an intramuscular injection, and the effect lasts for half an hour or a little more.

Browne (1950), on the other hand, states that pituitary extract is much more likely to cause a constriction ring than ergometrine. He reports it happening twice after the injection of five units in a series of 100 cases at King's College Hospital.

Gibberd (1947) has stated that oxytocic drugs should never, in any circumstances, be given before the delivery of the placenta.

In view of Eastman's statement and of the work of Schild *et alii*, it was decided to use "Pitocin" rather than ergometrine before the delivery of the placenta in an attempt to reduce the incidence of post-partum hæmorrhage.

TABLE II.
To Compare the Results of the Two Groups.

Indication.	Group I (2461 Cases).[1]	Group II (2663 Cases).[2]
Primary post-partum hæmorrhage[3]	82 (3·3%)	240 (9·0%)
Secondary post-partum hæmorrhage	12 (0·6%)	8 (0·3%)
Manual removal of the placenta	71 (2·8%)	69 (2·5%)

[1] Group I: 5·0 units of "Pitocin" given after birth of anterior shoulder, *plus* 5·0 units of "Pitocin" and 0·5 milligramme ergometrine given after delivery of placenta.

[2] Group II: "Pitocin", 10 units, and ergometrine, 0·5 milligramme, given after delivery of placenta (2663 cases).

[3] As previously defined.

Method of Administration.

The intramuscular route of administration was used, as the drug was to be given by a student or nurse. A series of deliveries was conducted with all patients receiving five units of "Pitocin" into the deltoid muscle after the birth of the anterior shoulder of the baby. Five units of "Pitocin" and 0·5 milligramme of ergometrine were given after delivery of the placenta. The results were compared with a similar number of deliveries conducted in the months preceding, when 10 units of "Pitocin" and 0·5 milligramme of ergometrine were given after the delivery of the placenta. Table II compares the results of the two groups.

TABLE III.

Amount of Blood Loss. (Ounces.)	Group I.	Group II.
40 and over	0·3% } 3·3%	1·5% } 9·0%
30 to 39 ..	0·9%	2·5%
20 to 29 ..	2·1%	5·0%
10 to 19 ..	9·6%	24·9%
0·9	87·1%	66·1%

Results.

The incidence of post-partum hæmorrhage was reduced from 9·0% to 3·3% by the use of "Pitocin", although it is still a serious cause of maternal morbidity, and the proportion of mothers who lost more than 852 millilitres (30 ounces) of blood was reduced from 4% to 1·2%. The reduced incidence of post-partum hæmorrhage in the year 1952-1953 (see Table I) is attributed to the routine use of "Pitocin" late in the second stage of labour from the end of January, 1952.

The incidence of secondary post-partum hæmorrhage was not appreciably increased. However, there is an increased incidence of ragged membranes after the use of "Pitocin".

TABLE IV.

Author.	Dose and Route of Administration.	Time Given.	Number of Cases.	Post-partum Hæmorrhage Rate.
		"Pitocin."		
Dieckman *et alii* (1947) ..	One unit by intravenous injection.	After birth of posterior shoulder.	1169	0·35% (more than 500 millilitres—18 ounces).
Lister (1950)	Five units by intravenous injection.	After crowning of head.	227	4% (more than 568 millilitres—20 ounces).
		Ergometrine.		
Davis and Boynton (1942) ..	0·2 milligramme by intravenous injection.	After birth of anterior shoulder.	1020	0·4% (over 500 millilitres—18 ounces).
Lister (1950)	1·0 milligramme by intravenous injection.	On crowning of head.	835	0·5% (over 568 millilitres—20 ounces).
Martin and Dumoulin (1953) ..	0·5 milligramme.	On crowning of head.	1000	1·2% (over 568 millilitres—20 ounces).
Dieckman (1947)	0·2 milligramme by intravenous injection.	After birth of anterior shoulder.	6638	2·5% (over 500 millilitres—18 ounces).
Vant (1950)	0·2 milligramme by intravenous injection.	With birth of shoulders.	4204	4·3% (over 600 millilitres—21 ounces).
Daley (1951)	0·5 milligramme by intravenous injection.	On crowning of head.	490	9·2% (over 568 millilitres—20 ounces).

Consideration will now be given to the results of some of the published series in which oxytocics have been used in the second stage of labour.

From a comparison of these figures, the best results were obtained when the oxytocics were used intravenously.

The dosage varies. Dieckman obtained better results by the use of one unit of "Pitocin" than Lister by the use of five units intravenously. Davis and Boynton's results with the use of 0·2 milligramme of ergometrine given intravenously compare favourably with Lister's results with the use of one milligramme intravenously.

TABLE V.

Duration of Third Stage. (Minutes.)	"Pitocin" Series.		Control Group.	
1 to 5	45·6%	84%	11·7%	44%
6 to 10	38·8%		32·9%	
11 to 15	9·0%	96%	23·4%	85%
16 to 20	1·7%		17·3%	
21 to 25	1·3%		5·1%	
26 to 30	1·4%		4·8%	
31 to 35	1·0%		2·0%	
36 to 40	0·05%		0·6%	
41 to 45	0·05%		0·5%	
45 and over	1·0%		1·4%	

Duration of the Third Stage.

The times given in this series refer to the actual delivery of the placenta. In some cases the placenta may have separated some minutes before its expulsion.

The routine management of the third stage in this hospital was not altered with the use of "Pitocin" late in the second stage.

The student expels the placenta if signs of separation have occurred after he has ligated and divided the cord when a contraction is present. If *asphyxia neonatorum* is present, an interval of some minutes may elapse after separation of the placenta before the *accoucheur* is ready to deliver the placenta; in the meantime an assistant has been controlling the fundus more or less continuously. The placenta is expelled by the mother's own efforts if possible; if not, manual expulsion is used.

The time taken for the separation of the placenta was reduced by the use of "Pitocin" at the end of the second stage.

In the "Pitocin" series, 84% of patients had a third stage of from one to ten minutes, compared with 44% of the control series. The incidence of a long third stage (forty-five minutes or more) is similar in the two groups.

The results in the control series did not confirm Leff's (1929) statement that in 87% of cases the placenta separates in five minutes or less after the birth of the child, and is ready to be delivered without delay.

Manual Removal After Use of "Pitocin".

In seven cases in the series in which "Pitocin" was given late in the second stage, compared with five cases in the control series, it was found that the placenta had completely separated, but was caught up in the cervix. In no case was undue difficulty experienced in dilating the cervix after "Pitocin" had been given, nor was the incidence of a contracted cervix found to be appreciably increased. In our experience manual removal was not found to be more difficult if "Pitocin" had been given in the second stage of labour.

SUMMARY.

1. Manual removal of the placenta is not a dangerous procedure. Early manual removal is advocated in the presence of hæmorrhage. An estimated blood loss of 280 millilitres (10 ounces) is an indication for manual removal. Deep anæsthesia is unnecessary.

2. There is no increased danger of puerperal sepsis after manual removal of the placenta if reasonable aseptic precautions are taken. Should signs of sepsis develop, early administration of antibiotics is indicated.

3. In a series of 2460 cases in which "Pitocin" was used in the second stage of labour, the incidence of post-partum hæmorrhage was reduced.

4. The use of "Pitocin" in the second stage was found to be a safe procedure. It does not increase the incidence or difficulties of manual removal of the placenta.

5. The duration of the third stage was shortened by the use of "Pitocin" late in the second stage.

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Reviews.

An Introduction to Functional Histology. By Geoffrey H. Bourne, D.Sc., D.Phil.; 1953. London: J. and A. Churchill, Limited. 9¼" × 7", pp. 206, with 98 illustrations. Price: 21s.

THE science of histology began as a branch of physiology. For a time it emerged into its proper sphere as a part of anatomy. During the past twenty years, however, histology has become progressively more of a very specialized department of biochemistry. Of course, any process of tissue staining is an exercise in applied biochemistry, so that histochemistry is, strictly, as old as systematic histology itself. The older histological techniques were, however, largely empirical—more of an art than a science. Today, histochemistry is highly specialized and precise—though less so than some enthusiasts believe—and has developed an imposing literature. Much of this is very confusing to a non-specialist, and to some extent the volume under review provides a useful introduction of the subject. The author is well known for his early work in Australia on the distribution of vitamin *C* and his interests remain primarily biochemical. This, no doubt, accounts for the strongly "biological" flavour of the section on staining techniques, compiled from various sources. The book gives a survey of the usual tissues dealt with in histology courses. The treatment is brief and mostly systematic, with reference to function and biochemical properties. The normal, phase-contrast and electron microscopes are invoked, but the section on different kinds of microscopy is hopelessly inadequate; moreover, there is no reference to Roberts's "flying spot" microscope which promises to be so important in cytochemical assessment. This volume appears to have a place in the teaching sphere, but we feel that it is more appropriate to the science curriculum than to the medical. The illustrations are very good in view of the relatively low price. The "opossum" referred to in Figure 87 is, presumably, the Australian phalanger, *Trichosurus*, not the American opossum, *Didelphys*.

A Guide to the Care of the Young Child (Infant and Pre-School Ages): For Students of Infant Welfare. By Vera Scantlebury-Brown, M.D., Ch.B., revised by Kate Campbell, M.D., B.S.; 1951. Melbourne: Department of Health. 9¼" × 6¼", pp. 252, with seven illustrations.

THIS third edition of the monumental work originally compiled in 1929 by the late Dr. Vera Scantlebury-Brown under the title of "A Guide to Infant Feeding" has been ably carried on again, and further expanded, by Dr. Kate Campbell (who collaborated with Dr. Scantlebury-Brown in producing the second edition six or seven years ago). Its scope, like its title, has inevitably changed over the years, and it now represents an authoritative statement of the infant welfare teaching in Victoria. It contains a tremendous amount of sound information that all medical practitioners, and nurses concerned with infants, should appreciate.

Dr. Campbell, in her preface (dated April, 1951) indicates the major alterations and additions in the present volume. These include an enlarged chapter on breast feeding, a rearrangement of the chapter on bottle feeding, a rewriting of the chapter on the premature infant, and an expansion of the chapter on child behaviour.

The various milk modifications for bottle feeding are still presented in considerable detail in the alphabetically classified tables that distinguish the conversation of Victorian mothercrafters wherever they subsequently travel. This tabulated information should serve as a useful reference for the less experience advisers of mothers, provided that it is sufficiently realized that "caloric requirements" are variable things, and that many babies will not be satisfied with the milk dilutions recommended here for their particular ages. The trend in infant feeding is towards more elasticity and less pseudo-science, and it is encouraging to find the rather formidable mathematics of the subject relegated in this edition to an appendix.

In addition to the several chapters dealing with breast and bottle feeding, mothercraft technique *et cetera*, there are sections on the feeding of older infants and preschool children; on the care of the newborn; on disturbances of alimentary function; and on common disorders of babyhood and infancy (including postural defects, infectious diseases, nervous manifestations, urgent conditions, and so on).

The expanded chapter by Miss E. Walker on "Understanding the Child's Behaviour" is well done. It should encourage some infant welfare workers to regard the young child as an individual with ideas and rights of his own, rather than as a mere food converter. This part of the book might perhaps be even further elaborated in a future edition.

The book, on the whole, has been satisfactorily produced for the Department of Health by the Victorian Government Printer. More attention has been paid in this edition to the use of bolder, black-faced type for side headings, rather than italics as previously, and this has improved the presentation considerably. An adequate index helps in its use as a reference book. A few printer's errors, especially in the tables of the appendix, are recorded on gummed correction sheets supplied with the volume.

Altogether, this edition should enhance the popularity of the "Guide" as a text and reference book for infant welfare trainees and workers in Australia. It will undoubtedly also be useful to many others concerned with the care of young children.

The Conception of Disease: Its History, its Versions and its Nature. By Walther Riese, M.D.; 1953. New York: Philosophical Library. 9" × 5¾", pp. 126. Price: $3.75.

THIS is a new book recently published by the Philosophical Library of New York. Disease is a fundamental experience of the human race, and the various epochs of civilization have had their general notion of diseases. In this book the writer, in 17 short chapters, traces historically the various conceptions of disease from the most primitive ideas about its nature to the most modern.

Some outstanding figures in medical history are encountered in these pages, men who have exerted a powerful influence in their day in shaping particular ideas about disease. In the chapter dealing with the anatomical conception of disease in which great names appear, such as Vesalius, Morgagni, Bichat and Virchow, there is an interesting study of the relationship between art and disease with emphasis on the contribution made by Leonardo da Vinci.

As one period of civilization has succeeded another the various ideas about disease have not passed completely away but have continued their existence throughout the history of medicine. There are rather full notes with this work and they have all been grouped together at the end of the book. The student of medical history will find material of interest in this book, but it appeals more to the philosophically minded.

Clinical Allergy. By French K. Hansel, M.D., M.S.; 1953. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 10" × 7", pp. 1006, with 86 illustrations and three plates in colour. Price: £9 3s. 9d.

THE production by one man of a comprehensive text-book on allergic diseases presents a difficult problem, because very few individuals can claim to be really conversant with every important detail of all these diseases. A studious and experienced author can still excel in writing a book dealing with the aspects on which he has worked persistently, but when a wide range is attempted it seems inevitable that a symposium by a well-selected team of specialists will be more authoritative and more instructive. F. K. Hansel, who published "Allergy of the Nose and Paranasal Sinuses" in

1936, has now produced "Clinical Allergy", a text-book of over a thousand pages, which attempts to cover almost the whole range of the allergic diseases. The result is a compilation containing a vast amount of useful information, some excellent chapters obviously based on extensive experience, and many pages of uncritical abstracts which give the reader very little guidance as to their truth. Some chapters, too, are out of date and ignore work published as much as six years ago.

On the other hand, the book contains a large number of references, and the abstracts from these will make very interesting reading for experienced workers who are unable to keep up with the voluminous literature.

The chapters dealing with the nose and throat contain much of interest and give useful guidance for treatment. The analyses of the effects of radical sinus surgery on asthma are depressing; some analyses show that benefit was obtained in only about half the cases and, in many of these, the good effects lasted for only a few months.

Hansel believes that allergy is the most important factor in hyperplastic sinus disease and polyposis with or without asthma, and that results of treatment are poor unless the allergic factors are controlled. This hardly squares with the very beneficial (if temporary) effects produced in many of these cases by heavy doses of antibiotics.

Many clinicians consider that the importance of food allergy in adults has been over-estimated in the past, but Hansel still believes that foods are often potent causes of allergic symptoms although he admits that skin tests with foods can be misleading.

The formidable table of contents occupies over nine pages and includes 53 chapters dealing not only with asthma, hay fever, allergic sinusitis, urticaria and atopic dermatitis, but also serum sickness, antihistamines, hormones, allergy in children, and numerous other relevant subjects. The paper, printing and illustrations are excellent.

A Pocket Obstetrics. By Arthur C. H. Bell, M.B., B.S., F.R.C.S., F.R.C.O.G., Hon. M.M.S.A.; Third Edition; 1953. London: J. and A. Churchill, Limited. 7¼" × 5", pp. 164, with 14 illustrations. Price: 8s. 6d.

IN the third edition of "A Pocket Obstetrics", by Arthur C. Bell, the text has been revised and certain changes have been made in accord with modern obstetric opinion. Some methods are still mentioned, though they would be rejected by most schools of obstetrics; for example, packing of the vagina in treating revealed accidental hæmorrhage, and the giving of pituitary extract and a turpentine enema for abdominal distension in the puerperium. The book, however, succeeds admirably in its object of providing in compact form a sound outline of obstetrics for midwives and general practitioners.

Compression Arthrodesis: Including Central Dislocation as a Principle in Hip Surgery. By John Charnley, F.R.C.S., with a chapter on Mechanics by Professor J. A. L. Matheson and Histological Observations by Professor S. L. Baker; 1953. Edinburgh and London: E. and S. Livingstone, Limited. 10" × 7", pp. 276, with 208 illustrations. Price: £2 2s.

THE author has written his book on joint arthrodesis, using a method of compressing the bone ends by pin fixation. He contends that this compression accelerates rapidly bony union in cancellous bone. The method is not original and was actually carried out first by Kay, of the United States of America, in 1932 but later abandoned by him. Any experienced orthopædic surgeon is well aware of the fact that successful bone grafting depends upon close contact of the graft and accuracy of fit. In fracture work also union of the fracture is dependent upon adequate contact of the fractured bone ends. This principle has been well established by Eggers. The author has probably lost his true perspective and has tended to be carried away by his own enthusiasm. He unduly stresses his arguments in favour of his method, and in one chapter, "The Watson-Jones Denunciation of Compression in Osseous Union", he refutes statements made by that distinguished surgeon.

The knee has been the joint most often operated on and, of course, lends itself to such a method, but we do not consider that evidence is given of acceleration of union in the shoulder joint nor in the hip joint, which is arthrodesed by an ingenious method in which the head of the femur is dislocated centrally into the acetabulum. And we regard the absence of a bony buttress on the inner side as an inherent weakness of this method. Some of the author's work is immature, and he is presenting ideas on arthrodesis of the interphalangeal joints of fingers on two cases only.

The book is published by E. and S. Livingstone, of Edinburgh, and is up to their usual high standard. It is beautifully printed and profusely illustrated. This book must have a very limited appeal. One could hardly recommend it, except to practising orthopædic surgeons who are perhaps engaged in teaching. It is certainly provocative and will give rise to a good deal of comment. A copy should be included in every surgical library for reference.

The Concept of Schizophrenia. By W. F. McAuley, M.D. (Belf.), D.P.M., R.C.P.S.I., with a foreword by John H. Ewen, F.R.C.P., D.P.M.; 1953. Bristol: John Wright and Sons, Limited. London: Simpkin Marshall, Limited. 9" × 5½", pp. 146. Price: 12s. 6d.

IN this rather sketchy book, the author commences with an historical review of the concept of schizophrenia, considers hereditary aspects, passes on to social and environmental influences, records opinions on neurophysiology and metabolism, deals with diagnosis and treatment as it affects the concept, and then presents his final conclusions. A superficial critical review, it is said by its author to be directed to "students preparing for examinations in psychological medicine and to those medical students who contemplate specialising in psychiatry". We fail to see how anyone, without long practical experience and a good basic knowledge of the clinical features of this disorder, can benefit by the scanty comments made. In the chapter entitled "A Survey of Modern Treatment", one statistical study is naïvely presented, yet numerous available investigations, based on sound statistical methods, are not quoted, nor is any mention made of such an important comparative follow-up study as that of Bleuler on untreated cases. Part-truths are expressed absolutely in an effort at over-simplification. Anthropological, cultural and ecological studies are largely ignored. The considerable amount of work, involving objective psychological experiment, is dismissed in two and a half small pages. Schilder's work on peripheral ego-boundaries is not mentioned. Psychotherapy in schizophrenia and the light which it has thrown on psychopathology must be beyond the author's experience, as it is not mentioned.

The book is well written and, to the initiated, reads like a novel, without in any way being novel in approach or content.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"The Medical Clinics of North America"; 1953. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. Boston Number. 9" × 6", pp. 320, with 35 illustrations. Price: £7 5s. *per annum* in cloth binding and £6 *per annum* in paper binding.

Contains 16 articles in a symposium on specific methods of treatment with three separate articles on the doctor's office laboratory, physical examination of the heart and civil malpractice.

"Sexual Behavior in the Human Female", by the Staff of the Institute for Sex Research, Indiana University, Alfred C. Kinsey, Wardell B. Pomeroy, Clyde E. Martin, Paul H. Gebhard and others; 1953. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 9½" × 6½", pp. 872, with 155 text figures. Price: £3 16s.

Based on material obtained from personal interviews with nearly 8000 women.

"The Vitamins in Medicine", by Franklin Bicknell, D.M., M.R.C.P., and Frederick Prescott, M.Sc., Ph.D., F.R.I.C., M.R.C.P.; Third Edition; 1953. London: William Heinemann (Medical Books), Limited. 10" × 6½", pp. 792, with 242 illustrations. Price: 70s.

Most of the book has been rewritten. The previous edition was issued in 1946.

"Food Poisoning and Food Hygiene", by Betty C. Hobbs, B.Sc., Ph.D., Dip.Bact.; 1953. London: Edward Arnold and Company. 9" × 6", pp. 182, with 44 illustrations. Price: 14s.

Written for those who handle food and for those who teach the principles which govern the control of food poisoning—local authority health officers, canteen supervisors, managers of food stores and teachers in schools of catering and domestic science.

The Medical Journal of Australia

SATURDAY, JANUARY 23, 1954.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: surname of author, initials of author, year, full title of article, name of journal without abbreviation, volume, number of first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

TIDINESS CAN BE OVERDONE.

"To everything there is a season, and a time to every purpose under heaven: a time to be born, and a time to die; a time to plant, and a time to pluck up that which is planted. . . .": so said the Preacher long ago. Each thing has a time, and its opposite or its complement has a time. The times only sometimes coincide, and it is well to keep the situation in perspective. Tidiness is a case in point. There is a time to be tidy, but it is not every time. Tidiness is an admirable virtue in its time, but it can be overdone, as any man knows who has a desk and an over-tidy wife or housekeeper or office clerk. Of course, we may set against tidiness opposites that have little to commend them. For example, a well-known social reformer in Sydney used to say that it was better to be neat and tidy than to be tight and needy, and there is something to be said for that. Nevertheless, many will approve the thought that there is a time to be tidy, and a time to—well, to relax; and sometimes advancing years bring that second time. The point arises from the remarks of one of *The Lancet's* "Peripatetic Correspondents"[1] on the question of the compulsory removal of old people to institutions. Statutory provision has apparently been made in England to cover this, but after some experience of its working the correspondent calls it a virtual death warrant, and is becoming rather cynical about its good intentions. "The landlord wants his tenant out, youngsters want the house, the petty feuds of neighbours, the interference of the village busybodies, the obsession for a tidy community, misguided charity, call it what you will, and the walls of an Englishman's castle are breached." The corollary should give us pause: "Take these old folks from home against their will, wash them, deprive them of their few tattered and cherished possessions, and the will to live is quenched." The picture and its sequel are familiar enough; so perhaps we can lend a sympathetic ear to the correspondent's question: "Does tidiness count for so much at eventide?"

The correspondent goes on to tell of an old beggerman who sublet his house to a young couple, keeping just one room for himself. A dirty old man, he spent his charity on drink and came home to be sick, and worse, on the stairs. The subtenants did not like it, and said so. The old man was removed compulsorily to the welfare hostel, which apparently was the old workhouse round the corner. "He died, but you do not write on a death certificate that he died of a broken heart." For the correspondent's next example, that of an old woman, one nearer home might be substituted. An old woman in the upstairs room of a disused shop in one of an Australian capital city's less attractive streets lives in dirt and chaotic untidiness; although not completely bedridden, she cannot manage to leave her room, and needs regular attention. A neighbour helps in what ways she can, and a nurse calls regularly. The nurse receives little or no payment, but that is not the motive of her calling, and she does her best to cope with the practically impossible conditions. The neighbours object to the woman's filthy habits, and the nurse comes to find her task almost intolerable. But the woman refuses to be moved. It is suggested that the reason for her refusal is that she has money in her room; but however that may be, she asserts her rights. The general practitioner who sometimes calls says that she should be left alone; the only possible grounds on which she could be moved would be those of mental derangement, and there is no justification for that. The nurse is revolted by the situation with which she has to try to cope, although she would not dream of abandoning the old woman, and at the same time thinks that better care would be available in an institution. She asks if compulsory removal is not possible, but apparently it is not. It is hard to say who of those concerned is right—the old woman, the nurse, the doctor, the neighbours. However, there is ultimately only one issue that matters; to quote *The Lancet's* correspondent again: "'Is it in the interests of the patient?' is a question which needs a lot of heart-searching on a busy day. To use the law to remove these old folk for the sake of others is to take another path of no return—the path which led to Ravensbruck and Dachau." The suggestion is very little exaggerated if we get back to first principles. No doubt there were many in Hitler's Germany who used the death chamber as a means to the end, time-honoured by the unscrupulous, of getting rid of any who made life inconvenient for them. On the other hand, there were many who expressed, and many who really felt, the urge to tidy things up. The mentally and physically unfit and those who did not conform to the desired pattern were cluttering up the decks that had to be cleared for war, and were encumbering the ground that was to be trodden by the master race. The tidying-up process had to go on. The master race itself was to be bred from the best stock, and all would be well. The absurdity and the repulsiveness of all this are quite evident to us now; but the same obsession for tidiness still finds its expression. Its exponents are to be found in the ranks of those who campaign for euthanasia, for the

[1] *Lancet*, August 8, 1953.

sterilization of the unfit, and for various extreme eugenic measures. They are amongst those who can envisage only a totalitarian goal for the welfare State. The social reforms gathering impetus in our day are vital and not to be held back; but if they pass into the hands of those who are so obsessively tidy that they will sweep up human souls as with a broom, such plans may appear outwardly to be beautiful, but inwardly will be full of dead men's bones.

Another form of tidiness that cannot well be commended is what we might call the passion for pigeon-holes. There are good bureaucrats and bad bureaucrats, but we all know the type who insists that everyone must be labelled and must conform to specification. If uncooperative individualists tend to break down his system, then he takes refuse in fantasy or adopts the more vigorous methods of Procrastes, the inn-keeper of ancient Greece, who stretched those of his guests who were too small for his stock-size bed or cut off the excess of those who were too large. Professor Walter Murdoch has written in one of his essays of the advantages of having a stock-size mind. He debunks with considerable skill the common pretence to admire people who have "the courage of their opinions", and unveils the self-delusion of "advanced thinkers" who regard themselves as original; and in that we are with him. However, we look for the tongue in the cheek when we find him extolling the stock-size mind and accepting it for himself. He tells Matthew Arnold's pathetic story about Mrs. Shelley, who, after Shelley's death, was consulting a friend about the education of her little son. "Oh, send him somewhere where they will teach him to think for himself", said the friend; whereupon Mrs. Shelley cried out: "Teach him to think for himself? Oh, my God, teach him rather to think like other people!" That touching cry, Professor Murdoch goes on, came from the heart of the woman who had been married to Shelley; "she had seen him fall upon the thorns of life and bleed; she knew how he had suffered, and how, with the best intentions in the world, he had made others suffer; and she had learned to realize the value of the comfortable, ordinary, average, conventional, stock-size mind. Cruel is the fate of the Shelleys of this world—the square pegs in the round hole which we call life, a pleasant enough hole if you fit it, a perfectly beastly hole if you don't". That is all unhappily true; but in most cases the Shelleys would not have it otherwise; and it is well for the world that they are as they are, though to their ranks belong many of whom the world was not worthy. However, even if we prefer the easier way for ourselves and, in Professor Murdoch's words, recognize with thankfulness that we are saved endless bother by having stock-size minds, we should hesitate before seeking to tidy up everybody else on all occasions. Human situations seldom lend themselves to tidiness, especially in medicine. Certainly we should think twice before imagining that the practice of medicine consists in taking human beings, labelling them as cases of this and that, and pushing them into pigeon-holes with a bottle of the nostrum that the latest piece of blotting-paper tells us should go with their label. "A man's a man for a' that."

Current Comment.

RAT POISON.

RECENTLY much publicity has been given to rat poison containing thallium, the misuse of which has provided some interesting medical problems. J. L. Allsop[1] has reviewed the clinical features of 18 cases of thallium poisoning observed at the Royal Prince Alfred Hospital, Sydney. In the past two years there has been an outbreak of poisoning by this metal which can be described only as an epidemic, an example of the type of mass psychology which permits a particular suicidal technique to develop as a sort of chain reaction. It is not clear why thallium should have become so popular as a suicidal and homicidal agent at this time, but there is little doubt that the graphic publicity in the daily Press has played a major part. The outbreak has also made it clear that some cases at least have run their course in the past undiagnosed. One patient died in a mental hospital after investigation in two teaching hospitals had failed to reveal the cause of the illness. The diagnosis was made in retrospect when the body was exhumed two years later, after a second death had occurred under similar circumstances.

Allsop describes the history of the metal, which was discovered by Crookes in England and Lamy in France in 1861, the latter describing its toxic effects in animals. Its salts are tasteless and readily soluble. It is used in many industrial processes, and a few cases of industrial poisoning but no deaths have been described. Its widest commercial use is as a rodenticide, insecticide and fungicide. Sabaroud used the acetate as a depilatory for ringworm in 1900, but later he gave it up as dangerous. Others continued to use it, however, and many intoxications and a number of deaths have been described. Its use as a suicidal and homicidal agent, as well as its role in accidental poisoning, has been facilitated by its ready availability in various types of rat poison, which contain from 1·8% to 2·5% of the element thallium. However, as a result of the recent publicity the sale of preparations containing thallium has been restricted in New South Wales by the inclusion of this substance in Part 1 of Schedule 1 of the *Poisons Act* of 1952. This provides that they may not be dispensed by anyone except a medical practitioner, a pharmacist or a specially licensed person. The sale must be recorded, together with the purpose for which the material is required, and the record must be signed by the vendor and the purchaser and kept for at least five years. Either the vendor must be acquainted with the purchaser or else the sale must be witnessed by a mutual acquaintance. The preparation must be clearly labelled poison.

Of Allsop's 18 patients, seven died. It was difficult to be dogmatic about the fatal dose, but it appeared to be between 0·5 and 1·0 gramme. No patient died who received emergency gastric lavage, though one had taken 1·7 grammes. Immediate symptoms occurred in only three patients, who suffered mild and transient abdominal pain and vomiting. The onset of significant symptoms occurred from eighteen hours to eight days after ingestion of the thallium, and in fatal cases death occurred after intervals varying from five days to nine months. Clinical manifestations were mainly neurological, alimentary and cardiovascular, and the falling of scalp and body hair was, of course, a constant and characteristic sign. It occurred in all patients who lived long enough and commenced from six to twenty-one days after ingestion of the poison. Neurological symptoms (the number of patients affected is shown in parentheses) were: paræsthesiæ and pain and tenderness in the extremities (16), weakness (11), objective sensory loss (6), muscle wasting (6), loss of deep reflexes (6), mental confusion (6—all the patients died), cranial nerve abnormalities (4), blurred vision (2). The cerebro-spinal fluid protein concentration was raised in six of 13 examinations, and the electroencephalographic tracings were

[1] Australasian Ann. Med., November, 1953.

abnormal in each of four patients tested. Colicky abdominal pain occurred in 10 cases, constipation in eight and vomiting in seven. None of the patients suffered from diarrhœa. There was no jaundice, and the results of liver function tests when carried out were normal. Tachycardia was present in 10 cases and hypertension in seven, and the electrocardiogram was abnormal in three out of eight cases. Detailed histological examination was made in one case and showed axonal degeneration with swelling of axonal cylinders of both somatic and autonomic nerves. Changes were present but less pronounced in the myelin sheaths and in the spinal cord. No lesions were found in the brain.

The most reliable method of diagnosis was by examination of the urine, and tests were made by the Government Analyst in 12 cases. Thallium was found in all. A twenty-four-hour sample was desirable, but in cases of urgency a specimen of 200 mils was sufficient. The metal was detected in the urine of some patients up to fifty days after ingestion. As emergency treatment, 1·5 grammes of potassium iodide (which forms an insoluble salt) were administered by mouth, followed by gastric aspiration and a further dose of iodide and of *Oleum Ricini*. For the late case, no therapy was found to be effective. BAL or potassium iodide was given intravenously to eight and nine patients respectively, but deaths occurred in both groups, and neither substance appeared to modify the course of the illness.

With the restrictions on the sale of thallium it is to be hoped that poisoning will become less frequent. At present it is used mainly as a rat poison, but it has been used in the past with considerable enthusiasm as a therapeutic agent for ringworm. It is an odd coincidence that the substance which appears likely to supersede it as a rat poison is dicoumarol. It will be remembered, as E. V. Allen, N. W. Barker and J. M. Waugh have pointed out, that the investigations of Roderick in the United States of America and of Schofield in Canada in 1921 led to the discovery that this substance in spoiled clover hay was the cause of hæmorrhagic death in cattle.[1] It is apparently just as attractive and dangerous to rats. It still enjoys its popularity as a therapeutic agent in man, and it is to be hoped that its future will be less sinister than has been that of thallium.

VAGOTOMY AND PEPTIC ULCER.

SINCE 1943, when his first paper on the subject was published, L. R. Dragstedt, of Chicago, has been the leading exponent and advocate of vagotomy in the treatment of peptic ulcer. Writing early in 1952,[2] he lamented the fact that the operation had not yet attained the widespread employment that he believed its merits warranted. He stated that since its introduction, the operation had been performed 750 times in the Department of Surgery in the University of Chicago (of which Dragstedt is chairman) with increasing satisfaction as they had become more experienced in the post-operative management of the patients. The operation was sound from the standpoint of the abnormal physiology present and was safe, and the clinical results, Dragstedt believed, were superior to those which followed subtotal gastric resection. In response to the critical and cautious view adopted by many surgeons towards the operation, Dragstedt asserted that objections were primarily due to unfamiliarity with post-operative management and perhaps also to inexperience, so that complete division of all vagus fibres to the stomach was not regularly secured. To illustrate his approach and to point out some of the factors which made for success or failure, Dragstedt then referred to details of three representative patients. In conclusion, he expressed the view that a certain degree of selection was both wise and practical, although no special selection had been made of patients thought to be suitable for the operation in the series of ulcer patients treated by vagotomy at the University of Chicago clinics. Vagotomy could be expected to give best results in those cases in which there was marked hypersecretion, both in the fasting stomach and during digestion. That included practically all cases of duodenal ulcer and gastro-jejunal ulcer, but excluded those of ulcers in the stomach proper. The history of exacerbation of ulcer pain during periods of nervous tension or stress was a favourable omen. In general, gastric vagotomy gave best results in those patients who had clear-cut objective evidence of disease of sufficient extent to account for the symptoms and complaints present. Vagotomy could not be expected to cure a psychoneurosis and, in general, ought to be employed for duodenal and gastro-jejunal ulcers with the same indications found useful as a guide for subtotal gastric resection.

It may be recalled that on January 21, 1950, this subject was reviewed in these columns, and we quoted the suggestion of a physician, T. G. Miller, that the time might have come to abandon temporarily the ready employment of vagotomy until a longer period of evaluation of its results was available. Later, on October 28, 1950, we referred to Dragstedt's reply to Miller, in which he admitted the shortness of the present period of observation and the technical difficulties of operation and post-operative management. At the same time, he expressed his conviction of the ætiological soundness of the procedure and looked to further experience to produce better clinical results. In view of this verbal passage of arms, it may be useful to review some of the subsequent reports published on the use of the procedure in the treatment of peptic ulcer. K. A. Meyer and I. F. Stein[1] describe the method as a valuable contribution which has proved to be most useful in certain cases of anastomotic peptic ulceration, although neither gastric resection nor vagotomy is followed by a permanent cure in all cases. The surgical procedure of choice in the treatment of an anastomotic ulcer must be selected for the individual case. In general, if adequate gastric resection has not previously been carried out, it is considered that the procedure of choice is a high gastrectomy, and this incidentally is described as the best method of surgical treatment for peptic ulcer on present evidence. Meyer and Stein state that vagotomy is indicated for the treatment of anastomotic ulcer following an adequate gastrectomy. Either subtotal gastrectomy or vagotomy may be used for the treatment of an anastomotic ulcer after an inadequate gastrectomy or a simple gastro-jejunostomy. Although resection is generally the treatment of choice, the simpler procedure—namely, vagotomy—may be indicated for a poor risk patient or for a patient with a severe inflammatory reaction around the ulcer. If a gastro-jejunostomy stoma is functioning properly, vagotomy alone may be employed; but if the stoma is partially or completely obstructed, vagotomy alone may be followed by severe gastric retention, and then the old anastomosis can be removed and a new one created. With regard to the question, much emphasized by Dragstedt, of the necessity of complete vagotomy, Meyer and Stein state that clinical evidence concerning this is as yet inconclusive. Although the majority of recurring peptic ulcers after vagotomy have followed incomplete vagus section, many patients have had a good result for three or four years after incomplete vagotomy.

Frank Glenn and Charles S. Harrison[2] quote the findings of the committee set up by the Society of Gastroenterology in the United States, which has reviewed several thousand cases in which vagotomy alone, vagotomy combined with gastro-enterostomy, gastric resection, and other procedures were used. The committee concluded: (i) that subtotal gastric resection alone or combined with vagotomy had produced better results in controlling peptic ulcer than gastro-enterostomy combined with vagotomy; (ii) that the addition of vagotomy to gastric resection had not improved the subjective results or the objective results of ulcer treatment during the period of their observations; (iii) that in the management of gastro-jejunal ulcer, subtotal gastric resection had produced better results than vagotomy

[1] *J.A.M.A.*, November 28, 1952.
[2] *Surg. Clin. N. America*, February, 1952.
[1] *Ibidem.*
[2] *Ibidem*, April, 1952.

alone; (iv) that vagotomy alone as a primary procedure was not an operation of value in the treatment of peptic ulcer, and that its popularity was waning. Glenn and Harrison express the view that patients who are quite young, yet resistant to medical measures, may be helped by vagotomy combined with gastro-enterostomy, in that it will tide them over a period in the natural course of their disease to a time when it can be controlled by conservative measures. For this group then, perhaps vagotomy should be used. For patients who have undergone gastric resection that has removed approximately two-thirds of the stomach, and yet have developed a marginal or jejunal ulcer, vagotomy would seem a proper procedure before a subtotal gastric resection is converted into a total resection. The place of vagotomy in the treatment of peptic ulcer has yet to be determined, but at the present time it appears to fall far short of gastric resection as a definitive surgical procedure. Frank H. Lahey[1] expresses a long-standing conviction that subtotal gastrectomy of adequate extensiveness is the best operation in existence today for the surgical treatment of duodenal ulcer. From his own wide experience and from examination of the reports of others, he concludes that vagotomy when added to subtotal gastrectomy improves the end results very little, if at all. He does not discuss the use of vagotomy alone. M. J. Healy, junior, S. J. Hellman and P. K. Sauer[3] have compared the results in two groups of patients selected as comparable. Twenty-five had undergone gastric resection for peptic ulcer, and 41 had undergone vagotomy. There were many points for and against the two procedures, but the overall conclusion was that gastric resection could be expected to produce significantly superior results in the elective surgical treatment of inractable duodenal ulcer.

In a paper published early last year on the surgical aspects of the treatment of ulcer, F. F. Rundle[3] expressed the opinion that the precise scope of vagotomy in the surgery of peptic ulcer was still not defined. Further time was required for the evaluation of its long-term results. It was, however, already clear that vagotomy alone had only a very limited application—namely, to certain bad-risk patients with anastomotic ulcer and its complications. Usually for such anastomotic ulcers dismantling of the anastomosis with partial gastrectomy was the better long-term treatment. The vagus nerve was, of course, secreto-motory to the stomach, and a really complete vagotomy resulted in a low, flat acid curve and prompt relief of pain; but there was also loss of motor tone, and that led to gastric tension and stasis with much consequent discomfort. Therefore vagotomy was now combined with some drainage operation such as pyloroplasty or gastro-jejunostomy. Subsequently, R. P. Melville,[4] commenting on Rundle's paper, emphasized the facts that gastric and duodenal ulcer produced two very different problems which were possibly distinct in their ætiology, and that in the approach to treatment, individual consideration had to be given to cases of peptic ulcer in its various situations. Although Melville's comments do not apply in this particular case to the conclusions regarding vagotomy, they do apply to a good deal of the discussion of the subject, in which not infrequently the distinctions between duodenal and gastric ulcer in their various situations are glossed over. A more recent British paper takes these considerations into account and offers clear and helpful, though not necessarily final, conclusions. The paper is by B. H. Hand and David H. Patey[5] and comes from the Middlesex Hospital. It is based on the results of a follow-up of 72 patients with duodenal and jejunal ulcer treated by vagotomy from 1946 to 1950. Vagotomy was used either alone or combined with some other procedure. Two patients died as a result of primary operation, and one further patient died after operation for gastric ulcer which recurred as a complication of the first operation. Hand and Patey state that gastric ulcer is a complication of vagotomy for duodenal ulcer, particularly of simple vagotomy; it is less common in the combined procedures. Recurrence of the duodenal ulcer took place in five out of twelve cases of simple vagotomy, and in four out of 28 cases of vagotomy *plus* pyloro-duodenectomy. Recurrent ulceration also developed in one of eight cases of vagotomy *plus* gastro-enterostomy. There was no recurrence in 17 cases of vagotomy *plus* hemigastrectomy, but the length of follow-up in this group of cases was only from one to two years. Vagotomy resulted in healing in all five cases of gastro-jejunal ulcer, but in one case a gastric ulcer developed. It is pointed out that the immediate post-operative course in cases of vagotomy is frequently anxious and stormy owing to the gastric and duodenal atony. The abdomen may have to be reopened, and the atony may even result in death. Analysis of the post-operative results in relation to barium meal and test meal findings revealed no close relation with the barium meal findings, but some relation with those of the test meal. Hand and Patey state that there is a late post-operative morbidity in the successful cases of vagotomy, comparable with, though less severe than, that which is met with after total gastrectomy. As with subtotal gastrectomy, however, these late symptoms are usually minor in their upsetting effect compared with the original ulcer symptoms. The present opinion of these surgeons is summed up as follows: in cases of gastric ulcer, vagotomy has no place; in cases of duodenal ulcer, vagotomy alone has no place, as the liability to recurrence of the duodenal ulcer or to development or recurrence of a gastric ulcer is very great; in spite of the fair proportion of satisfactory results, vagotomy combined with other surgical procedures on the stomach is unsatisfactory as a routine procedure owing to the anxieties experienced immediately after operation from gastric and duodenal atony and the incidence of recurrence of peptic ulceration; in cases of jejunal ulcer, vagotomy may have an important place in cases in which subtotal gastrectomy has already been performed. It should be noted that because of the immediate post-operative anxieties from gastric stasis, Hand and Patey abandoned vagotomy in the treatment of duodenal ulcers in 1950; and in relation to the one still generally accepted indication, namely, gastro-jejunal ulceration, their experience has suggested to them that vagotomy should, in general, be reserved for cases in which subtotal gastrectomy has already been performed. This last restriction is the result of their experience in one case in which a gastric ulcer recurred after vagotomy for jejunal ulcer where a gastro-jejunostomy had been performed for the original gastric ulcer.

[1] *Ibidem*, June, 1952.
[2] *J.A.M.A.*, September 29, 1951.
[3] M. J. AUSTRALIA, February 28, 1953.
[4] *Ibidem*, May 2, 1953.
[5] *Brit. J. Surg.*, September, 1953.

SPLENIC IRRADIATION IN LEUCHÆMIA.

DURING the years in which leuchæmia in its various forms has been well known from both the clinical and the pathological aspects, irradiation by X rays has been widely used over a period about half as long as that of our acquaintance with the disease. Satisfactory remissions have been obtained by local irradiation of the spleen in the chronic forms, and, while it is known that the chronic myeloid type in particular carries a better prognosis by reason of its more benign features, there seems no doubt of the value of irradiation as a therapeutic measure. Whether local irradiation has any degree of general indirect effect has been considered doubtful, as judged by observation of patients suffering from leuchæmia and of healthy animals subjected to exposure to X rays, but the general opinion appears to be that there is little evidence in favour of such a belief. However, if we put experimental work on one side, the important point seems to be, what is the effect of splenic irradiation on the cells of the bone marrow of a patient with leuchæmia? F. W. Gunz,[1] of Christchurch, New Zealand, has carried out some observations on this problem, and in introducing his work comments that it is remarkable that little attention has been turned in this

[1] *Blood*, August, 1953.

direction. He set out to supply this want by performing repeated aspirations of the bone marrow on 15 patients suffering from chronic myeloid leuchæmia and on four other patients with other diseases. The patients had received no recent irradiation; some had had no previous treatment. The site of aspiration was the sternum in most cases, though in one the iliac crest was punctured. An important point was to protect the aspiration site from the effects of radiation; this precaution was taken by covering the site with lead rubber. The voltages used were within 200,000 and 230,000. Marrow smears were examined in each instance before and eighty minutes after the first treatment, and twenty-four hours after the last treatment. Differential counts were made of 500 nucleated cells, and total and differential mitotic counts were also made. Classed under the category of "immature myeloid cells" were myeloblasts and myelocytes, the latter including all cells judged capable of mitotic division.

Comparisons were made between marrow counts made before and after X irradiation of the spleen, the total amount of radiation applied being that regarded as a full course of treatment. Actual figures are supplied in tables. A comparison was also instituted between the frequency of mitosis before and that after treatment. Repeat counts were carried out on the same material some weeks or months after the original counts so as to remove or minimize the possibility of bias on the part of the observer. Examination of the figures obtained seems to show that the pre-irradiation and post-irradiation counts indicate differences which are consistently significant in all and highly significant in some. Changes in mitosis were also observed, and the observations were forthwith extended to show if irradiation of distant parts would produce mitosis in the marrow cells of healthy persons. A small test series gives no indication of this. Gunz describes a decrease in the number of immature myeloid cells or an increase in the number of immature erythroid cells or both after irradiation of the spleen. An interesting finding was that when the marrow cells were examined eighty minutes after irradiation of the spleen, inhibition of mitosis was observed. If this finding is sustained, it might be taken as evidence of the indirect action of X rays in leuchæmia. The author has collected a certain amount of information concerning the amount of "stray" radiation, but remarks that more evidence is needed in connexion with the effect of distant radiation on the marrow, and with the possibility of some qualitative difference in the reactions to irradiation of the marrow cells in leuchæmia. No suggestion is advanced as to the cause of the mitotic inhibition described. Hitherto there has been a tendency to regard the clini ! effects of irradiation on chronic leuchæmia from the quantitative point of view. It would be interesting to have some further information.

THE SMOKE PROBLEM IN BRITAIN.

THE problem of atmospheric pollution by products of combustion of coal and its by-products has received a great deal of attention in Britain and the United States of recent years. It is, in fact, a very old problem in Britain. According to Peter C. G. Isaac,[1] it goes back at least to the year 1257, when Eleanor, Henry III's Queen, was forced to leave Nottingham because of the coal smoke. Soon after this, in 1273, the first smoke-abatement law was passed by Edward I, who prohibited the use of coal as being prejudicial to human health. In 1306 the first smoke-abatement group was formed by the lords spiritual and temporal and others attending Parliament who were annoyed at the increasing smoke; as a result a Royal Proclamation was promulgated prohibiting artificers from using coal in their furnaces. The severity of its enforcement warrants our attention when we are minded to bemoan the legislative and bureaucratic restriction of our personal liberties in this complex modern age; for, Isaac tells us, in the year following the Royal Proclamation one offender was condemned and executed for the offence. Through the subsequent centuries the agitation against smoke has continued. The emphasis today is on using fuel efficiently so as to avoid the production of smoke, rather than on "the Canute-like attempt to prevent the use of coal". Nevertheless, Isaac points out, the wheel is turning full circle, since in the smokeless zones which have been established in some British cities it is an offence to use other than smokeless fuels, which do not include raw coal. It is considered by investigators that the burning of coal and coke is responsible for nearly all the atmospheric pollution in Britain (with lesser contributions from fuel handling, oil and petrol burning, chemical processes and natural sources) and the damage to buildings, equipment, fabrics and agriculture, together with the waste of fuel involved in producing smoke, has been estimated to cost Britain at least £50,000,000 per year (one estimate doubles this sum). Domestic sources, according to figures compiled in 1948, contribute approximately one-sixth of the ash, one-fifth of the sulphur dioxide and one-half of the smoke. However, with the exception of the laws instituting the smokeless zones already referred to, the statute law does not cover the domestic polluter and even some industrial processes are partially or completely exempt. The only consolation is that recourse may be had to Common Law for a nuisance from any source. A system of "prior approval" of furnaces before their installation is being applied on a voluntary basis and is considered to offer some hope for the future, although Isaac considers that it should be mandatory, as it is in many parts of America. It is hoped to control the domestic offender by increasing the number of smokeless zones and encouraging the more efficient use of fuel in modern appliances. The cooperation of industry in the prevention of atmospheric pollution is stated to be, on the whole, good; here, it is considered, the main approach must be on the basis of fuel-saving. Finally, a number of methods of flue-gas "scrubbing" have been devised for the removal of sulphur dioxide.

Isaac sums up the situation by saying that, owing to fuel shortage in Britain, the problems of fuel economy and of the prevention of smoke pollution are closely bound together. This has turned the minds of heating engineers in new directions, and "there is a certain aspiration, unfortunately but slightly consummated, for district heating". In Pimlico a district-heating scheme has been designed to heat some 2300 dwellings (apartments) with waste heat from the Battersea power station. It is hoped that this will eventually result in an annual saving of 10,000 tons of coal. A report issued in 1952 by the Committee on National Policy for the Use of Fuel and Power Resources relates to the question of fuel efficiency and smoke abatement. Isaac states that the report stresses the social cost of smoke and makes the following recommendations in this respect: (i) More efficient types of open fires should be developed to burn coal more efficiently and smokelessly. (ii) More gas should be used for domestic heating during peak loads on electricity generation. (iii) The fuel-efficiency advisory service should be expanded. (iv) Firms installing efficient equipment for combustion should receive financial incentives. (v) Prior approval for industrial and commercial heating plants should be obtained. (vi) There should be more training schemes for stokers. (vii) Steam railway locomotives should be replaced by other types. (viii) There should be wider use of low-temperature carbonization for production of smokeless fuels. (ix) Smoke-abatement by-laws should be more generally adopted under the Public Health Act, 1936. (x) There should be more smokeless zones.

Whether or not all these suggestions are adopted, developments in Britain will be watched in Australia with interest. Our problems in this sphere are relatively small and occur mostly in isolated areas. It would be unpardonable if, in the face of overseas experience, the problem here was allowed to develop, much less reach the dimensions that have challenged the people of Britain and America.

[1] *Arch. Indust. Hyg.*, September, 1953.

Abstracts from Medical Literature.

DERMATOLOGY.

The Concept of Dermatophytid.

O. F. JILLSON AND R. A. HOEKELMAN (*Arch. Dermat. & Syph.*, December, 1952) state that dermatophytid is the name given to the group of skin diseases resulting from allergic reactions to fungous infections of the skin—so-called dermatophytosis. To establish the diagnosis of dermatophytid, the following criteria are required: (i) a focus of dermatophytosis; (ii) a positive response in a skin test to trichophytin; (iii) the precipitation of dermatophytid due to blood-borne fungi or fungous products released by (*a*) activation of dermatophytosis and (*b*) over-treatment of dermatophytosis; (iv) the absence of fungi in the dermatophytid lesions; (v) the clearing of dermatophytid after the dermatophytosis has been eradicated. The following types of dermatophytids have been proposed: (i) papular lesions, (ii) vesicular lesions of the hands, (iii) erysipelas-like dermatitis of the lower extremities, (iv) migrating thrombophlebitis and *thromboangiitis obliterans*, (v) urticaria, (vi) miscellaneous group (*erythema multiforme, erythema nodosum*, lesions simulating *pityriasis rosea* and *erythema annulare centrifugum*). Five patients were observed with *erythema annulare centrifugum* that fulfilled the minimal criteria for the diagnosis of dermatophytid. Also, two patients had vesicular dermatophytid of the hands. In two of the cases *erythema annulare centrifugum* was reproduced and abolished by the experimental production and eradication of *tinea pedis*.

Treatment of Granuloma Annulare.

H. M. ROBINSON (*Arch. Dermat. & Syph.*, March, 1953) states that two patients with *granuloma annulare* have been treated by incising lesions. Each lesion was wiped with alcohol and sprayed with ethyl chloride until snow appeared, and from four to six incisions were made through each lesion with a Bard-Parker pointed blade. These incisions were not permitted to cross. Even though one must cut deeply enough to draw blood, healing is by first intention and without perceptible scarring. This procedure may be advisable when chemotherapy and X rays fail.

ACTH and Cortisone in Pemphigus Vulgaris.

J. T. AQUILINA *et alii* (*Arch. Dermat. & Syph.*, February, 1953) have observed, in two cases of acute fulminating *pemphigus vulgaris*, that 20 to 25 milligrammes of ACTH injected intravenously will effect subsidence of the temperature and pulse rate and promote a feeling of well-being within twenty-four hours after injection. Continuation of this therapy will render a "toxic" patient "non-toxic" within a week to ten days, at which time the bullous lesions will show involution. The authors state that the role of supportive therapy should also be stressed, since lost fluids, electrolytes, plasma and plasma proteins cannot be restored by ACTH, but must be replenished directly. The liberal use of antibiotic therapy, given both parenterally and topically, which helps to control the secondary infection, is discontinued promptly when the involution of the erupted bullous lesions begins. Three cases of *pemphigus vulgaris* are presented. In two cases in which the disease was acute, fulminating and toxic, ACTH therapy was a life-saving measure in producing remission of the disease. In both cases, the condition is now in complete remission in response to treatment with cortisone by mouth, in daily doses of 90 to 100 milligrammes. In the patient with acute exacerbations of chronic *pemphigus vulgaris*, the disease is now maintained in complete remission with 300 milligrammes of orally administered cortisone daily.

Local Oxytetracycline (Terramycin) Therapy of Skin Infections.

C. S. WRIGHT AND D. N. TSCHAN (*Arch. Dermat. & Syph.*, February, 1953) have applied oxytetracycline ointment locally in the treatment of 845 patients, with a complete follow-up of 635. Of the 635 patients, 391 had various dermatoses, and in the remaining 244, oxytetracycline was applied to study its healing effects on wounds following minor skin surgery. The most striking results were observed in the treatment of *impetigo contagiosa*. The ointment was rubbed in gently but thoroughly every three hours. Folliculitis and *sycosis vulgaris* included everything from a simple superficial involvement of the hair follicles to a deep-seated coccogenous sycosis of the beard. Response to therapy was in direct relation to the depth of the infection, the deep-seated follicular infections requiring a much longer time for a cure or for improvement. Impetiginized miscellaneous eruptions include secondarily infected contact dermatitis, atopic eczema, dermatophytosis and seborrhœic eczema. No improvement was noted in cases of psoriasis, *herpes zoster*, *verruca vulgaris*, seborrhœic eczema, *molluscum contagiosum* and erysipeloid. Viral diseases of the skin failed to respond to oxytetracycline applied topically. In not a single case did oxytetracycline hydrochloride cause irritation of the skin.

Sodium Propionate with Chlorophyll.

S. M. PECK, E. F. TRAUB AND H. J. SPOOR (*Arch. Dermat. & Syph.*, March, 1953) state that a powder was made for application in which there was 99·75% of sodium propionate and 0·25% of a water-soluble chlorophyll derivative, sodium copper chlorophyllin. The patients were instructed to dissolve the contents of an envelope (2·3 grammes) in a glass of water (six ounces or 180 mils) for use as a wet dressing or a mouth wash. If a stronger solution was wanted, two or even three envelopes of powder were dissolved in the same amount of water. In some instances, especially for foot baths, the 2·3 grammes of the chlorophyllin preparation were dissolved in a pint (473 mils) of water. The preparation was very useful in cases of monilial vaginitis as a douche. It was used in well over 100 cases. No actual cases of sensitivity were recorded. Experiments showed that both chlorophyllin and sodium propionate had some bacteriostatic and bactericidal properties. Wet dressings were used for acute contact dermatitis during the acute stages and were found to be most efficient. Especially striking was the strong anti-pruritic property of the chlorophyllin-sodium propionate mixture. Wet dressings were also most useful in cases of atopic eczema and neurodermatitis. In cases of acute seborrhœic eczema affecting the ears, under the breasts and in the groins, wet packs produced great relief of the pruritus in all instances. It was in the seborrhœic cases that the authors obtained their most striking results. There was much relief of itching in cases of rectal eczema, but the preparation was useful only in the acute stages. The chlorophyllin-sodium propionate powder was used in a foot bath, initially 2·3 grammes to the pint of water, for dermatophytosis in the acute stage. Seven patients with vulvo-vaginitis due to monilia following the use of antibiotics were greatly relieved of pruritus, and the discharge was lessened. Most of the patients used the chlorophyllin-sodium propionate mixture for at least five weeks as a douche. Three patients with rectal and scrotal dermatitis following the use of penicillin and aureomycin were treated with great relief of the acute manifestations and of the pruritus. Nummular eczema in two patients was not alleviated. The solution was also of great benefit to four patients with senile pruritus when the patients rubbed the solution on the affected areas three or four times a day and allowed it to dry. Patients with varicose eczema and varicose ulcers were benefited. Clinically, two patients with ichthyosis were greatly improved. Wet dressings were useful in cases of diaper rash for acute symptoms; and when these were controlled, an ointment containing 5% sodium propionate and 0·0125% chlorophyllin helped to prevent recurrences.

Trichophyton Rubrum (Purpureum) Infections.

S. ROTHMAN (*Arch. Dermat. & Syph.*, March, 1953) reports 20 cases of therapy-resistant *Trichophyton rubrum* (*purpureum*) infections of the palms, soles, toenails and fingernails observed within the last three years. Palmar and plantar manifestations included superficial circinate and annular scaling lesions reminiscent of *keratolysis exfoliativa*, punctate hyperkeratotic lesions and diffuse hyperkeratotic and callous lesions. Oral glucose tolerance tests were carried out on 20 patients with therapy-resistant *tinea rubrum* infection. Of the 20 patients, eight had unusually increased oral tolerance with a peak value of 105 milligrammes per 100 mils or less. Five showed a less pronounced but still conspicuously increased tolerance with a peak value of 122 milligrammes per 100 mils or less. The author states that for all practical purposes these patients have been perfectly healthy persons. Local treatment consisted of soaking the affected nail plates by applying cotton pads moistened with lithium bromide 75 grammes in water to make 100 mils for one-half to one hour every night. After the soaks, the following nail lacquer was applied to the nails: clear nail lacquer 630·4 mils, lithium bromide 108·0 grammes, alcohol 85% 120·0 mils, water 48·0 mils, "Asterol" base 57·6 grammes. This lacquer was left on for twenty-four hours and removed with nail polish remover just before the soaking was done again the following

evening. The author presents a working hypothesis to the effect that if the glucose content of the skin and horny layer is low, the fungi adapt themselves to metabolize substances other than glucose and thereby become more resistant to fungistatic agents which primarily inhibit carbohydrate utilization. Combined local application of a fungistatic agent, concentrated lithium bromide and concentrated glucose solutions resulted in the disappearance of the onychomycosis in three out of nine patients after several months.

Mycosis Fungoides Treated with Antimonials.

J. GARB (*Arch. Dermat. & Syph.*, May, 1953) cites cases to show the effectiveness of antimonials in patients with *mycosis fungoides*; two of the patients were completely free of lesions for four years. The author states that patients with *mycosis fungoides* should get a trial administration of antimony potassium tartrate injections for six to eight weeks if there are no contraindications, preferably before any other treatment has been used, and surely if other treatment has failed. No less than three injections a week should be given, as infrequent dosage may cause a resistance to antimonials. Patients who respond should receive for six months stibophen either alone or alternating with the diethylaminoethanol salt of sodium antimony gluconate after all lesions have regressed. If toxicity develops, treatment should be suspended for three to six weeks.

UROLOGY.

Granulomatous Prostatitis.

G. T. THOMPSON AND D. D. ALBERS (*J. Urol.*, April, 1953) state that this report was prompted by recent experience with a few cases in which a diagnosis of definite carcinoma of the prostate was made clinically, but the microscopic examination of tissue showed granulomatous prostatitis. The latter disease was first described by Tanner and McDonald in 1943. These observers describe the histological appearances as those of chronic inflammation typified by the presence of many histiocytic cells. The normal structure of the prostate is completely destroyed in some parts; the acini are replaced by dense infiltration of lymphocytes, plasma cells and large pale-staining mononuclear cells; polymorphonuclear and eosinophile leucocytes are also present. Foreign body giant cells and pseudotubercles, which appear to form around prostatic ducts, are also present. In a group of 36 cases of granulomatous prostatitis taken from among those met with at the Mayo Clinic in six years up to the end of 1949, a pre-operative diagnosis of carcinoma had been made in 20, and benign hypertrophy in 16. A careful study of these cases fails to reveal any features which are specific for this disease. Some patients had recent febrile episodes, and in some cases a urinary infection was present, but these factors can be present with carcinoma. Nothing has been found to suggest a tuberculous basis for granulomatous prostatitis in spite of certain histological features. The trouble is that so often the gland feels hard and nodular, and a clinical diagnosis of carcinoma is made with confidence. All the patients in this group of 36 had tissue removed by endoscopic resection, the results being good in 28, fair in three, and poor in five. There were local reasons to account for these five poor results. None of these patients are known to have developed carcinoma later on, and no connexion is known between this disease and carcinoma. The disquieting conclusion from these observations is that this disease is very easily mistaken for carcinoma. Therefore, when the findings from examination of resection tissue are negative for carcinoma on biopsy, a perineal biopsy should be carried out. Castration should not be performed without proof of the presence of carcinoma by biopsy or by radiological evidence of metastasis to bone. Nor should one condemn a man to permanent œstrogenic therapy without proof of carcinoma.

Carcinoma of the Bladder.

F. E. COOK AND J. C. KIMBROUGH (*J. Urol.*, April, 1953) have made follow-up studies of cases of carcinoma of the bladder. The patients in the series consisted of 45 males and nine females. The average age was forty-eight years. Patients with non-infiltrating growths had a 62% better chance of surviving for five years than those with infiltrating lesions. Patients with well-differentiated papillary growths had a 100% five-year survival rate (24 patients). Those with moderately differentiated papilloma (14 patients) had a 71% five-year survival rate. Thirty-five patients with non-infiltrating growths (regardless of the pathological grading or type) had an 88% five-year survival rate, while the rate in 19 cases of infiltrating growths was only 26%. The routine method of treatment at the Walter Reed Army Hospital, Washington, D.C., is as follows: (i) transurethral resection and coagulation for small, non-infiltrating carcinomata; (ii) suprapubic electric excision for carcinomata greater than 1·5 centimetres which do not infiltrate muscle; (iii) segmental vesical resection for carcinomata which do not involve the trigone or the ureters, but which have invaded bladder muscle without going beyond the bladder wall; (iv) if a recurrence occurs after any of the above methods, treatment on the above lines and, in addition, intracavitary irradiation to a dose of 8000*r* to destroy tumour implants and precancerous lesions of the mucosa; (v) cystectomy, with uretero-colic anastomosis for carcinomata not amenable to segmental resection; (vi) external irradiation, cutaneous ureterostomy, and uretero-colic anastomosis, which are palliative procedures.

Ureterostomy in Situ.

S. N. VOSE AND G. M. DIXEY (*J. Urol.*, April, 1953) state that cutaneous ureterostomy has received considerable attention in the literature, and the various techniques testify to the somewhat unsatisfactory status of the procedure as a whole. The authors' experience with this method of actual ureteric anastomosis to the skin has been limited but mostly unsatisfactory. They state that strictures are not uncommon, and subsequent periureteral abscess formation is a frequent complication. An inlying catheter should always be used, for strictures occur, not at the ostium or the skin, but several centimetres beneath the skin. When one considers the normal anatomy of the ureter, and its usual course through loose areolar tissue, one can understand why displacement of the duct to traverse muscular and fascial layers, with coincident interference with blood and nerve supply, may result in stricture formation. The method to which the name ureterostomy *in situ* is given involves no displacement of the duct. This comprises a permanent, or semi-permanent, fistula between the ureter and the skin by intubated ureterostomy. The usual incision used for approach to the middle third of the ureter is made. A short incision is made in the anterior wall of the duct, rather high up. A Foley catheter, 16, 18 or 20F, is inserted, and advanced till its point is felt in the renal pelvis. The balloon is then inflated to five mils. The catheter is brought out through the lower end of the incision. It is arranged that the catheter pursues a fairly straight line in its course, that is, it should be free from angulation. If the catheter functions badly, or if it comes out, a replacing catheter will be found to pass through the fistula and up the ureter quite easily, and this is done as necessary. To avoid changes, a straight polyethylene catheter has been used, and in one case was left in place for nine months. It was easily replaced after removal for inspection. Such a straight tube is kept in place by cementing a polyethylene disk to it. The disk is kept in place by adhesive.

Prostatic Carcinoma and Cortisone.

W. G. HAYWARD (*J. Urol.*, January, 1953) states that when anti-androgenic control of prostatic carcinoma seems to become lost after some years of great improvement, the objective is to reduce or abolish adrenal production of androgen. Bilateral total adrenalectomy has been tried for this, but in old and weak men this is often not applicable and other means must be sought. The author studies the manifold interrelationships between the controlling pituitary gland and the testis, prostate and adrenal cortex, and evolves a rationale for the treatment of late relapse of prostatic carcinoma by means of cortisone. The first patient so treated was a man, aged ninety-one years, who, nine years earlier, in 1942, had had bilateral orchidectomy and stilbœstrol therapy for carcinoma of the prostate. He had done very well till 1951, when local symptoms occurred, with very great pain and then a rapid decline in general health. The author determined to try out replacement therapy with cortisone, in the hope of securing adrenal cortical atrophy. Treatment was begun with 100 milligrammes per day, reduced rapidly to 25 milligrammes per day. For six days no change was noticed. After that, improvement was sudden and dramatic, both local and general. Later, the patient was able to travel and even do some active work, and was comfortable and happy over one year later. The author reports that subsequently three other patients have similarly responded, but a fourth, with a very malignant anaplastic carcinoma, showed no benefit from the therapy. It is pointed out that up to this there has been a complete absence of any mention of this type of therapy, and the author submits a plea for trial of the method.

Medical Matters in Parliament.

THE NATIONAL HEALTH BILL, 1953.

THE HOUSE OF REPRESENTATIVES.

ON November 12, 1953, the Minister for Health, SIR EARLE PAGE, moved in the House of Representatives:

> That leave be given to bring in a bill for an Act relating to the provision of pharmaceutical, sickness and hospital benefits and of medical and dental services.

First Reading.

The Bill was presented and read a first time.

Second Reading.

The Minister then moved: "That the Bill be now read a second time."

In the course of his speech the Minister said that Australia was fortunate in having found it possible not only to develop a national health scheme the principles of which had earned the unanimous approval of those most qualified to speak in fifty-three countries of the world, but also to have it operating smoothly, efficiently and economically over the whole of the continent before the final legislation incorporating the scheme in the law was ratified by Parliament. He went on to state that the most important thing in the world was individual and national health. This placed tremendous responsibility on the medical profession, which had to be prepared to make its best minds available for the purpose. To secure health, medical direction and contact with all countries and their health plans were indispensable. Good health spoke all languages; it was the great common interest of all peoples. It was quite possible that the pursuit of health might give to the peoples of the world the magic talisman which would bring about universal peace. In order to be permanently successful, a national health scheme had to be something more than could be stated in figures or money. It must have substantial social and moral values, which were intangible. The restoration of health and the prolongation of life were the task of the physician, and it was the individual with his idiosyncrasies, allergies and family hereditary and personal and financial problems who had to be cured. It was the individual who had to be treated. Results could best be obtained by the maintenance of the position, prestige and fullest usefulness of the general medical practitioner. The Minister quoted words from a report of the General Practice Review Committee set up by the Council of the British Medical Association, in which his statement was supported. Australia had conditions which had stimulated the quality and capacity of the general medical practitioner. The aim of the Government's scheme was to conserve the high quality of general medical practice as well as high specialist efficiency. The fact that the general medical practitioner was able to follow his patients in suburban as well as in country hospitals had been of tremendous assistance. In Great Britain one of the chief complaints of the National Health system was that the general practitioner had inadequate hospital contacts and lack of proper time for examination of his patients. The most important point in medical treatment was complete and early examination and diagnosis, whether the treatment was given by a general practitioner or by a specialist. Retention of the intimate doctor-patient relationship had also to be supported by social and psychological factors that built up the morale, independence, benevolence and community spirit of the individual. The presence of social factors enabled individual financial risks to be averaged on a community basis. The principle of the Government's National Health Scheme was to build up a partnership of mutual aid, supported and stimulated by governmental aid. Substantial government aid towards meeting the cost of hospital and medical care and treatment was only a small part of the assistance given. The Minister reminded the House that the scheme had been made to work despite constitutional and administrative difficulties inherent in the federal system, especially since the maintenance of health was constitutionally a state obligation. It was true that in 1946 an amendment to the Constitution had made it possible for the Commonwealth to deal with pharmaceutical, sickness and hospital benefits and medical and dental services, but not so as to authorize any form of civil conscription. Registration of doctors was possible by the Commonwealth only in its own territories. It had been necessary to include a special clause in the Bill to ensure that a medical practitioner who was employed by the Commonwealth would be entitled to perform on behalf of the Commonwealth the duties of his profession in any other State or territory, notwithstanding that he was not registered in that State or territory. Under the Health Scheme the Australian health system was working as a partnership of individual citizens, the healing professions, insurance and hospital organizations, and State and Federal governments, with a minimal increase in governmental officers and maximal use of self-help and voluntary cooperation. There were four features which were indispensable to the permanence of the scheme. They were: (*a*) the quality of the medical service had to be kept high, (*b*) the coverage of the people had to be very wide, (*c*) the cost of the scheme had to be controlled, (*d*) hospital administration had to be kept solvent. The Minister held that the comparison of these features with those of previously proposed Australian schemes and of health schemes operating in other countries showed the advantage of the present legislation. He said that a division of the schedule for medical benefits into a compulsory minimal range for general practitioner benefits, which had to be covered by every insurance organization, and an optional schedule for specialties which might or might not be covered, made the minimum cost payable for the general practitioner schedule a very low premium. The Minister described the seven particular features of the present scheme. In the first place, the section of the community least able to fend for itself—that section consisting of pensioners and dependants—was provided with a comprehensive medical treatment and medicine service free of charge to the pensioner, as well as twelve shillings a day when the pensioner was in a public hospital. The Pensioner Medical Service covered the treatment of patients with active tuberculosis. While the patients were acutely infectious they were given special allowances, and while they were unable to work they recieved an invalid pension. Both these allowances entitled them to free medical treatment and medicine. Their hospitalization in public hospitals was free. In the second place, a voluntary insurance system had been evolved, the terms for insurance in which were extremely low by reason of a governmental contribution towards benefits. For example, for a contribution of one shilling a week a single person could insure for all the items of medical treatment set out in the first or minimum schedule. He might be covered for all the items in both schedules for one shilling and fourpence a week, and hospital benefits to the value of six guineas could be obtained for a premium of as little as threepence a week. Further, premiums of the insurance organizations for married people, which covered benefits for the whole of the family and dependants, cost one shilling and sixpence a week for the minimum general practitioner service, and two shillings a week for the maximum benefits, which included the optional specialist service. For hospital insurance the minimum premium for a married person was sixpence a week, which gave six guineas a week for eighty-four days' stay in hospital. For a weekly premium of one shilling a married person and his dependants would receive eight guineas a week towards hospitalization. If people desired increased fund benefits, these might be obtained for relatively increased premiums. In the third place, it had to be noted that all insurance organizations covered a married man and his dependants. In the fourth place, the width of the coverage was further ensured by a provision that the Australian Government had made in respect of the aged and those with preexisting and chronic diseases. The insurance organizations which would not insure for coverage of preexisting or chronic diseases were willing to insure coverage for other diseases. The Commonwealth had said that it would pay to all those insured the Commonwealth benefit for those diseases which were not covered by the organization. In the fifth place, a completely universal coverage was given to every resident in Australia in connexion with the distribution of life-saving drugs when ordered on a doctor's prescription. In the sixth place, children up to the age of thirteen years who attended crèches, kindergartens and public and private primary schools throughout Australia were entitled to one-third of a pint of milk on every school day. In the seventh place, all the factors mentioned were available throughout the whole continent of Australia. The Minister drew attention to the fact that the patient was free to choose the doctor whom he wished to have, and if he so desired, he might change his doctor from time to time.

The Minister went on to observe that supervision and control of governmental expenditure were ensured by the fact that the insurance organizations at least matched the Commonwealth benefit, paid the combined Commonwealth fund benefit to the patient and received recoupment for the Commonwealth benefit which it had paid only on the production of a receipt from a doctor or a hospital for the whole amount. The fact that the patient had to pay a small amount meant that opportunities for collusion were much less than if the whole fee was provided from benefits and the patient had nothing to pay. The most costly free service in the scheme was the Pharmaceutical Benefits

Service, which provided for the supply of free life-saving drugs on a doctor's prescription to every resident of Australia. This part of the scheme had been operating since August, 1950. During the past year its cost had been brought well under control by a cooperative partnership with the British Medical Association and the Pharmaceutical Service Guild of Australia. The methods which had secured this result were unique in the world. The Australian scheme alone, of all the schemes in the world, seemed able to keep the number of prescriptions and consequent drug cost under control. The Minister gave figures in support of this statement. At the same time the expenditure on compounded drugs in the pensioner scheme had risen steeply, and he was afraid that no way had been found to control such expenditure. The provision of free drugs had proved to be the Achilles heel of other national health schemes. The Minister referred to the cost of drug schemes in New Zealand and in Great Britain and on their rising costs. He said that a comparison of Australian figures showed that the provision of free drugs in the year 1952 to 1953 was £841,000 less than it had been in the previous year. This result, which was unique in the world, had been achieved by the collaboration of the British Medical Association and the Federal Pharmaceutical Guild of Australia, whose members were policing and disciplining the whole drug service. The Minister said that he could not speak too highly of the activities of the doctors of Australia as a whole in this matter. The medical profession had no pecuniary interest in the proper management of the mechanics of the distribution of free life-saving drugs. The interest of the doctors was the welfare of the patient, yet the doctors had helped to elaborate machinery which they were working under regulations whereby they not only controlled the provision of free drugs, but also prevented abuse in other parts of the health scheme. The Minister referred to the establishment of the Specialist Advisory Committee for the determination of appropriate items of free life-saving drugs for inclusion in the scheme. The Minister pointed out that the scheme was helping to make hospitals become solvent. He pointed out that the only other countries in the world where new hospitals were being built were those which had developed voluntary insurance schemes, such as Switzerland, the United States of America, Canada, Sweden and so on. The Minister quoted figures showing the increase in revenue of several large hospitals in the year 1952 to 1953 as compared with the year 1951 to 1952. For example, the increase in revenue at the Sydney Hospital was £41,104; at the Women's Hospital, Sydney, it was £43,368; at the Royal Melbourne Hospital it was £125,816; at the Prince Henry Hospital it was £55,948. In Western Australia in 1952 to 1953 the revenue of public hospitals had increased from Commonwealth aid and pensioners' fees by £381,000. The improvement in the financial position of large metropolitan hospitals applied equally to small country hospitals. For example, the Dubbo Base Hospital in New South Wales had reported that the credit balance for 1953 was the first since the year 1947. The Minister had a good deal to say about the fight against tuberculosis. He described the tuberculosis allowance and said that although the number of cases notified had increased, the number of deaths had been very substantially reduced. It was the generous allowances for those affected by tuberculosis which had contributed to the success of the campaign against the disease. In concluding his speech the Minister said that the Government was proud of its achievement in the health field and believed that the people had endorsed its plan. The fact that approximately 5,000,000 persons were covered for hospital and medical benefits was proof positive that the National Health Scheme was no longer a fantasy, but was in fact a reality which in the period of its operation had become an integral part of the life of the Australian people.

MR. ALLAN FRASER said that the health services embodied in the Bill were part of the policy of the Labour Party in the establishment of the welfare state, but that the benefits set out in it were directly opposed to Labour's methods. The methods specified in the Bill were obnoxious and undemocratic. They were completely opposed to all modern thinking in relation to the provision of social services. The methods of the Government, which Mr. Fraser described as callous and wicked in the way that they sacrificed the interests of patients and of members of the community, were obviously designed to do two things. The first was to hand over completely to the control of the British Medical Association the health policy of the nation, and the second was to protect the pockets of the wealthy supporters of the Government from the obligation to make a proper contribution towards the cost of a national health scheme. The scheme presented by the Government was not accepted by the Labour Party; it was a paltering and pitiful scheme. The Minister claimed credit for reaching agreement with the medical profession on health matters. Mr. Fraser asked what were the facts. The Minister had gone to the British Medical Association for instructions and had been told what to do. The scheme placed before Parliament at no point placed any obligation on the medical profession of the country to bear social obligations as members of the Australian community. It was not a health scheme in the interests of the citizens so much as a medical scheme in the interests of the doctors. Mr. Fraser referred to the journey of the Minister to The Hague, where he had addressed an audience comprised of doctors who had been sent to a congress by various organizations throughout the world. He failed to see what good purpose for Australia had been served by the Minister's visit to The Hague. He had made a complete misstatement regarding the policy and outlook of the Australian Labour Party on health matters. He had informed the congress that it was the policy of the Australian Labour Party to nationalize medicine. The Minister knew perfectly well that the Australian Constitution permitted of no such thing. The Commonwealth's only direct power in relation to health was a quarantine power. The other power was to provide medical and dental benefits, but not so as to authorize any civil conscription. That power had been written into the Constitution at the instance of the Labour Government. Under the health scheme put forward by the previous Labour Government, doctors had been free to prescribe for their patients as they thought fit. The one degree of compulsion which had been attached to the Pharmaceutical Benefits was that if a doctor in his unfettered discretion decided to prescribe an item contained in the Commonwealth formulary, he had to write it on a government form and thereby make it free to the patient. The compulsion attached to the document to be used and not to the medicament to be prescribed. Mr. Fraser criticized the Minister's remarks about the campaign against tuberculosis and said that the plan to eradicate the disease had been formed by the previous Labour Government and was put into effect along with a scheme of allowances to tuberculosis sufferers and their dependants in 1948, eighteen months before the present Government had assumed office. It was, in Mr. Fraser's opinion, an extraordinary thing that the whole operation of the Pensioner Medical Scheme seemingly rested on a private arrangement made between the Minister, who was a member of the British Medical Association. . . . (Interjection by the Minister: "That is not so.") Mr. Fraser altered his statement and said that the matter rested on a private arrangement between the Minister, who was a non-unionist, and the British Medical Association. It appeared to be a hole-in-the-corner arrangement. Mr. Fraser had searched in vain for any public documents on the Pensioner Medical Service. He thought that any agreement the Government had made about this matter with the British Medical Association should be annexed to the Bill and that if there was not any agreement, then one should be made. After it had been made it should be tabled in the House. One provision worth noting was that the Minister could not remove a doctor from the Pensioner Medical Scheme unless his decision to do so was supported by a committee of inquiry, composed predominantly of members of the British Medical Association. The Bill provided for an appeal to the court by the doctor who had been removed by that committee. As the Bill was now framed, the court of appeal was confined to a consideration of the evidence previously heard by the committee of members of the British Medical Association. The Bill put forward in March, 1953, had provided that the court of appeal could admit further evidence and allow cross-examination and hear a matter afresh. That provision was not to be found in the Bill before the House.

In regard to the Pharmaceutical Benefits section of the Bill, there were two remarkable limitations in the prescribing of free medicine. The first tied a doctor down in regard to the amount or quantity of a drug that he might prescribe, and the second gave the Minister power to limit a doctor in regard to the disease or purpose for which the doctor might prescribe the drug in question. In accepting these two limitations on the freedom to prescribe the medical profession had given way on a matter about which it had formerly refused any compromise at all. It had done this because it accepted the position that restrictions on the prescription of certain drugs were urgently needed, because experience had shown great abuse, worse than extravagance, as well as possible damage to the natural flora of the human body through reckless over-prescription of drugs. In support of that statement Mr. Fraser referred to an article entitled "Antibiotics Amok" published in THE MEDICAL JOURNAL OF AUSTRALIA of June 28, 1952.

Mr. Fraser discussed the hospital benefits scheme. Under the scheme of hospital benefits put forward by the Chifley government, the basic principle was that those who were unfortunate enough to be ill should be as far as possible relieved of the financial burden associated with their illnesses.

There was no humiliating means test. If a man was wealthy, he had paid in taxation according to his means proportionately more than the poor man. Each according to his means had paid for the right which had been given by the Chifley government. In reply to an interjection that the Chifley government scheme had not worked, Mr. Fraser said that it had worked splendidly, but that it had been completely swept aside by the present government. Under the Page scheme a payment of eight shillings a day for each patient in a public bed of a hospital was paid by the Government only if the State had accepted the Commonwealth agreement and made a charge against the patient. In other words, the Government had told the applicant for hospital attention that if he had succeeded in making some provision for himself it would make payment for him. If he had not succeeded in making some provision for himself it would not assist him. That was a complete reversal of the social services means test. Mr. Fraser then moved the following amendment to the motion for the second reading of the Bill.

> That all words after "That" be left out with a view to insert in lieu thereof the following words: "the bill be withdrawn and redrafted to place greater emphasis through co-operation with the States and local authorities on the promotion of positive health—
>
> (*a*) in the establishment and maintenance of diagnostic and health centres;
>
> (*b*) in dental care of children under sixteen years of age;
>
> (*c*) in the provision of medical training and research facilities and a system of regional hospitals;
>
> and to provide—
>
> (1) for substantially increased rates of hospital benefit having regard to the rise of hospital costs;
>
> (2) for the negotiation of fresh agreements between the Commonwealth and the States to ensure that throughout Australia there should be no charge and no means test for qualified patients occupying beds in public wards of public hospitals;
>
> (3) that payment of Commonwealth hospital benefits or medical benefits shall not be conditional upon a patient being a contributor to a hospitals fund or a medical benefits fund;
>
> (4) that registered organizations shall be subsidized to ensure that their benefits will be extended to chronic sufferers and those suffering disabilities at the commencement of their membership or [*sic*] registered organizations;
>
> (5) to devise in consultation with the medical profession and State Governments machinery to stabilize medical charges and to determine just variations of those charges;
>
> (6) that medical benefits be extended to mileage charges of medical practitioners incurred by patients especially those in outback areas;
>
> (7) that the provision of medical and hospital benefits should be financed from revenue raised on a graduated scale based upon capacity to pay;
>
> (8) for the cure and relief of mental illness.

The Minister had stated that 5,000,000 people were now covered in one form or another by the Commonwealth health scheme. There were, however, in Australia 8,000,000 people, so the Government had failed to cover the whole community. It was fantastically wrong that a citizen who had paid his taxes should be deprived of a Commonwealth medical benefit, which was paid for out of revenue, merely because he had not contributed to some private fund or friendly society. It was equally absurd that the Minister should produce a so-called medical scheme which excluded the very people who most needed medical attention in the community. Mr. Fraser asked who it was who needed medical attention more than the citizen who was already suffering from some illness or disability. Under the provisions of the Bill he was excluded if he happened to be suffering from an illness or disability at the time when he applied for membership to a society. Again, who needed medical attention more than the unfortunate sufferer from a chronic condition? Under the Bill he was excluded from full benefits of the scheme.

The scheme was extraordinarily defective in that there was no safeguard to prevent doctors from increasing their fees. If the amounts paid under the scheme were reasonable, why did the scheme not provide some safeguard to prevent a few unscrupulous members of the medical profession from so increasing their fees that they would take the whole of the benefit for themselves and leave the patient without any benefit whatever. There should be an advisory committee on medical charges. Under Clause 26 of the Bill, payment of the Commonwealth benefit was not to be made unless full information was supplied to the Director-General of Health. Only a doctor could supply this information, but there was no provision in the Bill which could compel the doctor to supply it. The Bill should contain a clause which could require a doctor, at the patient's request, to supply to the patient particulars of the service that he had rendered. The omission was important, because it was typical of the way in which the Bill had been framed in order to avoid the slightest obligation being placed upon members of the medical profession. The Minister had been very tender towards members of his own profession. Another notable omission from the provision for medical benefits was the provision of a charge for mileage.

The Labour Party was opposed to the idea that citizens should be compelled to contribute to a private fund, but if the provision remained in the Bill, at least there should be an adequate control of the administration of the organizations. The Bill did not provide for such control. There should be some limitation on the amount which the societies in question might spend on salaries and expenses of various kinds. It should also be arranged that the directors and controllers of such funds and societies should be elected by the members, those who paid the contributions, and not by people who had other interests in their management. Mr. Fraser said that the Bill was entirely lacking in provision for the promotion of positive health. Apart from the free provision of milk for school children under the age of thirteen years, there was no such provision. No mention had also been made of the dental treatment of children. The Australian Labour Party believed that the Government could have made a great contribution to positive health had it encouraged the establishment and maintenance of diagnostic and health centres throughout Australia.

The amendment was seconded by Dr. H. V. Evatt.

DR. DONALD CAMERON said that the House was discussing one of the most important social services measures that had ever come before Parliament. In regard to the speech by Mr. Alan Fraser, it had to be noted first of all that Mr. Fraser had made no substantial attack on the Bill at any point. Secondly, he had declared that Labour would reverse the health policy outlined in the Bill if it ever came into office, and Dr. Cameron hoped that the people throughout Australia who had invested their money in societies would remember his words. Thirdly, he had spent most of his time in attacking personally the Minister for Health. Dr. Cameron said that he wished to draw a distinction between public health medicine—preventive medicine, which was concerned with such things as water supplies, conservancy and the like, or what was the impersonal side of medicine—and, on the other hand, curative medicine, with which the Bill was chiefly concerned and which was a personal problem. The problem was to bring medical care within the reach of everybody without sacrificing the personal relationship of doctor and patient. In this solution every country was faced with three choices. The first was that the State should do nothing—in other words, that everything should be left to the individual. The second was that the State should do everything, that it should assume all responsibilities and provide full medical care. The third solution was the formation of a partnership with freedom for the individual patient and for the doctor and with assistance from the State. Where the State provided everything there was a loss of independence of the individual and of the doctor, a diminution of the personal relationship upon which the sound practice of medicine depended. It should not be imagined that it was possible to hand over the responsibility of the individual to the welfare state and retain for the individual his rights, which very often meant the privileges he desired to have. The Bill under discussion was not based on that philosophy. It was based upon the idea that the individual had responsibilities. The real solution of the problem rested upon what Dr. Cameron had described as the third possibility, a partnership which meant freedom for the individual and freedom for the doctor with assistance from the State. Such an arrangement had to be based on the general practitioner and the family doctor and not on the clinical hospital nor even on the doctor as salaried servant of the State. Mr. Fraser had emphasized the view that there should be diagnostic and health centres and clinics in which medical care would be given. Dr. Cameron wished to make it plain that the State could provide technical excellence, but only the general practitioner could provide real, fundamental medical care. The early recognition of disease, particularly serious disease, was not done in clinics; it was done by the doctor who went to the patient's home. Under the Bill the

patient had, if members of the House cared to look at it in that way, the right to hire and fire, and he should have it. Under the Bill the doctor had responsibility first to his patient and to his conscience and not first to the State service of which he was a part. Clinics treated cases; general practitioners treated human beings. Dr. Cameron discussed the principles of the Bill and explained that the first section provided for the medical services, the second section was concerned with hospital services, the third section dealt with pensioners, the fourth section dealt with pharmaceutical benefits, and the fifth section was concerned with preventive medicine. The Bill was the product of intense thought and consultation, and, Dr. Cameron believed, of inspiration. He expressed the view that it was likely that of all the Minister's achievements and of his services for the country over many years, it might well prove that none had been greater than the Bill under discussion.

MR. C. A. R. MORGAN said he wished to discuss the matter from the point of view of the patient. He said that the Labour Government stood by Mr. Curtin and Mr. Chifley and promised social justice to all sections of the community and a reward for contributions made by everyone to bring about victory during the war. The scheme devised by them had not met with the full support and cooperation of the British Medical Association, which had used its organized strength to a point of intimidation of individual practitioners and had proposed a levy to produce a fighting fund to bring about the downfall of the Chifley Government and the election of the present Government. The present Minister for Health notoriously reflected the views of the British Medical Association. Acting on behalf of the Government, he had agreed to implement as part of a secret bargain made with the British Medical Association for the support of that body for the Liberal and Australian Country Parties in the 1946 and 1949 general elections a prospectus of a plan which he presented to the British Medical Association Congress in Brisbane and which he now described as his own. The Minister had presented his scheme to the World Medical Congress [*sic*] at The Hague at the expense of the Australian Government so that he could obtain endorsement of his plan by that gathering. That gathering was a gathering of private medical men and did not represent the people of Australia or indeed of any other country. The measure was a purely negative approach to the question of national health and established a huge superstructure dependent upon, and even encouraging, more sickness and disease. It contributed nothing to the positive health of the community. Mr. Morgan held that the Minister's scheme was more open to abuse than the scheme put forward by the previous Government. Already some frauds had been perpetrated by some doctors and chemists through fictitious prescriptions. The Minister had been forced to set up disciplinary committees, but he had bowed to the dictates of the British Medical Association and had constituted the committees from nominees of that body, instead of establishing an independent tribunal of a judicial or semi-judicial nature. Mr. Morgan referred to the health schemes operating in New Zealand and Great Britain, and said that these had been maintained by Conservative governments that had succeeded Labour administrations. The British Medical Association, which previously had resisted the inauguration of Labour's scheme, had swung in favour of it. Mr. Morgan thought that no doubt a similar position would have arisen in Australia if Labour's scheme had been put to a fair test. Mr. Morgan discussed the Medical Benefits Fund, which he said had sprung up like a mushroom. He said that doctors and chemists were channelling patients into that organization with the express object of undermining the structure and recognized principle of genuine, long-established friendly societies. He said that no fewer than seventeen of the directors of the Medical Benefits Fund were doctors, and that its rules were designed to prevent contributors, who were most vitally concerned, from having anything to say in its administration. Mr. Morgan said that just as was the case with the provision of costly life-saving drugs, there would be a natural psychological tendency on the part of those who would be paying into the newly formed insurance bodies to want to get some benefit back from their money, even to the point of being easily persuaded to undergo unnecessary operations involving the removal of vital organs of the body. Mr. Morgan referred to the schedule in connexion with the Act, and said that there were 701 different operations and services provided in it as compared with 192 under the Chifley-McKenna scheme. This was really significant and indicated some outside influence. He suspected the hidden hand of the British Medical Association behind the Minister. Mr. Morgan said that the Government's incentive basis of remuneration for the medical and pharmaceutical professions according to the number of operations performed or drugs prescribed, coupled with high taxation, was a snare and delusion for them as well as for the community generally. This was the most pernicious measure ever introduced into the House. The title "National Health Bill" was a misnomer. It would promote rather than alleviate sickness and disease in the community. Countless human souls would be sacrificed to the greedy clutches of Mammon. The whole emphasis of the Bill was on the private practice of medicine, and the Minister's own pamphlet showed that in this country 77% of medical men were engaged in private practice, 8% were in the public service, 13% were in public hospitals, and only 2% were in teaching and research. This was an undue balance in favour of private practice. A more correct balance existed in Sweden, where 60% of doctors were in government or community services and 40% in private practice. Mr. Morgan referred to the need for an extension of government services, especially in research and teaching personnel.

THE HONOURABLE W. C. HAWORTH said that he could quite understand why the attack that had been made by Mr. Fraser on the Minister was so bitter. The reason was that the Bill rubbed salt into the wound caused to the Labour Party by its failure in its eight years of office to bring down a national health scheme that would actually work. Mr. Haworth believed that the present measure, if wisely administered, would provide the maximum medical benefit to those people who most required it. Each part of the service was already in operation and had been well tested. The health scheme was a compromise between private enterprise and public control. The success already achieved by the scheme showed that by using the services of the family doctor and the family chemist, and by including the big public hospitals and medical societies, it was possible to bridge the gap between free enterprise and public control without an apparent break in the traditional conduct and customs of the professions concerned. Mr. Haworth said that the health service of the previous Government had had all the virtues except the vital ones. The present Government had demanded that a health scheme should be neither a regimented scheme nor a socialized scheme, but one which harnessed in a proper working partnership the Government's health experts and the medical, pharmaceutical and allied professions, as well as the hospitals, friendly societies and medical benefit organizations. Anyone who was sufficiently interested to make a close study of the health scheme of the previous Government knew why it was doomed to failure, and this was because nationalization of the health services of the country was one of the planks of the platform of the Labour Party. This was printed in black and white in the Labour Party's platform. Professional practice in the health scheme should not be regarded as a piece of machinery that could be fitted into a socialistic régime and be expected to work. There must be confidence and trust between the Government and the professions. A right to treatment with life-saving drugs should not be denied to any citizen because of their cost. The Government had recognized this principle by making these life-saving drugs available free of cost. In this way it had honoured the promise that it made in 1949 to provide these drugs free to the people. Mr. Haworth concluded by stating that within a period of three years the Government had introduced a complete national health service.

MR. J. F. FITZGERALD said that the Labour Party believed that an efficient service that covered all aspects of the people's health was essential to the welfare of every progressive nation. Such a service should be complete and should be available to all citizens, but such a scheme could not be found in the present Bill. The present Bill had been framed by the British Medical Association and was in effect a British Medical Association Bill. It was quite obvious that under the measure the British Medical Association would control and ultimately dominate the health scheme. Visiting nurses, dentists and friendly societies would be left completely outside the real beneficiaries. The people should remember that the Government had been compelled to take certain action against the Medical Benefits Fund which had been set up and was controlled by the doctors themselves. He quoted a letter to the editor of *The Sydney Morning Herald* published on November 7, 1953, in which it was stated that the Medical Benefits Fund of Australia had been informed by a Department of Health official that it would not receive registration unless it lowered its proposed benefits of 10s. per consultation and visit to 7s. 6d. and 7s. 6d. Finally the Government had accepted rates of 7s. 6d. and 9s. Therefore, it appeared that the Medical Benefits Fund set up by the doctors themselves had had to be disciplined and controlled by the Government. Any medical benefit scheme that allowed the medical profession to make profits by keeping people on the sick list was not in the best interests of the nation. Mr. Fitzgerald submitted that the payment of the Government's contribution to an individual should not be conditional upon his being a contributor to a medical benefit fund. The Opposition asked that a provision be inserted in the Bill in

order to provide that the fees charged by doctors should be properly controlled and that the Commonwealth's contribution should more closely approximate an equitable charge to cover the patient's medical account. Perhaps the worst feature of the Government's scheme was that it tended to lend an element of farce. Mr. Fitzgerald by this was referring to the refusal of societies to cover chronic illness. The Bill did not cover chronic complaints. It probably would not cover half the members of Parliament. Further, a complete health scheme should cover dental services. The National Health Scheme was concerned solely with the doctors and not with the people who were paying into it. It was a phoney scheme and he thought that the people of Australia would express their objection and their hostility to it in a manner that would sweep from the Government benches those Honourable Members who thought that it would save them from political oblivion.

MR. L. J. FAILES said that he found himself in the unique position of supporting a national health scheme which was in operation, was approved by the people, was a credit to its originator, and was recognized as one of the best health schemes in the world. The Opposition's case was so devoid of substance that half of the statements that were made were nothing more than a spiteful, venomous and personal attack. Mr. Fraser had attempted to justify his apparent opposition to the measure, although he knew in his own heart that he supported it. It had been said, and would probably be said again, that when the Labour Party returned to office it would repeal this legislation. Mr. Failes had no doubt that if the Australian Labour Party ever regained office it would introduce the kind of socialistic measure which it had introduced previously. The electors were well aware that it was the intention of the Opposition to nationalize the medical profession and to repeal this legislation if it should ever be reelected to office. The statement that the Bill had first been presented in the previous March and allowed to die was utter rubbish. It had also been stated that the Minister had gone to the British Medical Association for instructions. Mr. Failes suggested that if the Honourable Member who made that remark required information on the particular subject he might go to a specialist in that subject. As the Minister for Health was himself a specialist in medical matters, it was natural that he should confer with his colleagues. It was rubbish to speak about the British Medical Association dictating the Bill. Surely it was a contradiction of terms to say that although the British Medical Association dictated the Bill, its members should be disciplined by the Minister. There was no doubt that criticism of the Bill had been made with the object of covering up the fact that those opposing it recognized that it was a good Bill and the Government's health scheme was working properly. The present measure was an excellent example of true federation, in which every government in Australia cooperated. Mr. Failes said that he had questioned medical practitioners who were not aware of the purpose of his inquiries, and had discovered that there were very few cases of chronic complaints in the community compared with the number of persons who received medical treatment. At this point Mr. Curtin interjected, and Mr. Failes replied that Mr. Curtin might quote from many sources, but that when Mr. Failes had made inquiries as to the number of chronic sufferers in a town and district of 3000 to 4000 persons, he had been informed by doctors that they had on their books only six people with chronic complaints and that in only two instances were the complaints serious. Mr. Failes said that the leader of the Opposition had sent a telegram to a person in Mr. Failes's electorate on the eve of the Senate election promising that if the Australian Labour Party was returned to office it would introduce health legislation which would include provision for chronic sufferers. That proposal had been entirely political. At the time the Right Honourable gentleman sent the telegram he should have known that there were hospital benefit organizations in Australia which were prepared to accept persons suffering from chronic complaints.

MR. A. C. BIRD said that the Government's scheme was good in parts, like the curate's egg. Despite the Minister's satisfaction, it was quite evident to all intelligent observers that much remained to be done in the sphere of medical service before the scheme would meet the requirements of the people. The Labour Party supported the benefits that were contained in the Bill because its members had advocated and introduced a number of them, but the Opposition offered total objection to a number of the provisions by which the scheme was to be implemented. It was obvious from the provisions of the Bill that the British Medical Association had taken a not inconsiderable part in the preparation of the scheme. The trouble was that medical science had leapt far ahead of social provision to apply that knowledge to the whole community and not to a section of it. The fundamental principle of any health scheme should be that it gave cover to the whole community; but this fundamental precept had been completely ignored by the Government. Mr. Failes had admitted that only half the people of Australia were covered by the scheme; it therefore fell at the first hurdle. Any system of voluntary insurance would break down if it failed to provide for the very people for whom it should care. He referred to the vast body of unskilled workers for whom the threat of unemployment was always present. He invited the Minister to inform the House what would happen if Australia experienced another economic depression and many people because of unemployment were forced to allow their membership of approved societies to lapse. Mr. Bird awaited an explanation of the reason why a person who had paid contributions to the National Welfare Fund by way of taxation should be deprived of government benefits because he was not a member of an approved organization. Mr. Bird referred to approved organizations and said that they showed a surprising lack of uniformity. He said that there was a tremendous variation in the time taken to pay claims. Mr. Bird pointed out that persons who had to undergo major operations and who were in need of a greater measure of assistance received least benefit proportionately under the scheme. Anomalies of that kind should be adjusted immediately. From a financial point of view the attitude adopted by approved societies was understandable, because chronic cases were a drain upon their resources. He also referred to the fact that no provision was made in the Bill to ensure that the fees now chargeable by doctors should remain reasonably stationary. The scheme was a challenge to the medical profession to exercise restraint. One notable fault in the Bill was the absence of any provision for the assistance of those who were mentally ill.

MR. P. E. JOSKE referred to Mr. Alan Fraser's statement that the plan prepared by the Minister for Health was vague. He asked how it could be vague when it was working, and working well. He said that the Minister for Health sought to impose limits upon the power of governments to make regulations on health matters. He observed that any legislation which limited the regulation-making power of governments was to be approved. The object of the Bill was to provide a full-scale national health plan. It dealt with the prevention, care, cure and costs of illness. The Minister had approached the matter on the basis of common sense, and Mr. Joske said that there had to be a spirit of cooperation between the Australian Government, State governments, municipalities, hospital authorities, friendly societies and members of the medical and allied professions. A simple but convincing example of the effectiveness of the Government scheme lay in the fact that one of every three prescriptions written by doctors in the country was dispensed at the expense of the Government. Mr. Joske said that the provision of life-saving and disease-preventing drugs had been provided by the Government, and that such provision had not been made by the former Labour Government. The Medical Benefits plan was based upon the principle of voluntary insurance, or the admirable principle of self-help. Mr. Joske referred to the previous efforts of the Labour Government to introduce the health scheme, and said that without doubt it was a form of civil conscription. Under the Medical Benefits Scheme of the present Government medicine was not socialized, the patient was entitled to choose his own doctor, and the doctor was neither a servant of the State nor bound to prescribe in accordance with a formula. Mr. Joske concluded by saying that the present plan would prolong life and promote greater health. It did not depend upon a soulless ideology, but upon the needs of men and women.

MR. R. JOSHUA, M.C., said that Mr. Joske had become a propagandist and was a victim of the Minister for Health. He stated that it had to be remembered that no practical health plan in Australia had been formulated until a Labour Government introduced one. If it had not been for the work of the Labour Party it would not have been possible for the people to participate in any national health scheme. The Government's health plan was based on a most inadequate foundation. Voluntary hospitalization had never appealed to the majority of the people and it never would do so. The scheme had been put forward in order to discourage people from entering hospitals and thus to prevent the overcrowding of those institutions. He did not agree that the financial position of hospitals had improved, and quoted instances in which patients' fees were outstanding. His main opposition to the scheme flowed from the fact that it had serious disadvantages in the way of costs. He did not accept the Minister's statement that a big and expensive department had not been set up to deal with the matter. The Miniser must be aware of the cost of running insurance benefit societies, and it would be illuminating if he would put them before the House. Mr. Joshua then referred to

the plight of old people throughout Australia, and he compared the amounts received by an old person entering hospital with the amounts received when he entered a benevolent home. He said that the people of Australia did not want a voluntary hospital scheme. The Australian Labour Party was entirely opposed to any scheme that included a flat rate of payment by everyone. The Opposition believed that payment should be based on the ability of all people to pay. He concluded by saying that if an amendment proposed by the Opposition was accepted the people would have a scheme for which payment would be made through taxation.

MR. J. O. CRAMER said that the difference between the attitude of the Government and that of the Opposition was that the former believed in a voluntary contributory health service system which enabled people to retain their self-respect, but that the latter believed in a socialized scheme. He thought that the Australian Labour Party was extremely jealous of the scheme. There was no doubt that the people of Australia wanted something that carried with it some personal responsibility. It had been claimed that thousands of doctors had refused to participate in the scheme and, on the other hand, it had been stated that the scheme was all for the doctors, that it had been initiated by them, and that they had dictated its terms. It seemed extraordinary that if they had dictated the terms of the scheme they should not want to participate in it. Mr. Cramer said that the much-vaunted civilization of today was of no value if a system of national health for the treatment of illnesses was not evolved. After paying a tribute to the amazing energy and selfless service of the Minister for Health in the cause of his fellow men, Mr. Cramer proceeded to discuss the amendments put forward by the Opposition. Among the points he made was that those who could afford to pay for hospital treatment should, as a matter of fact, pay for it, and it should be possible for hospitals to compel them to do so. He concluded that the Labour Party still advocated a system of compulsion and control, and that it favoured a completely socialized health scheme. The National Health Scheme was based upon a spirit of cooperation among all persons associated with it. It was a voluntary scheme and therein lay its fascination. He concluded by referring to the campaign that was being waged against tuberculosis and said that it was really wonderful. He believed that ultimately the campaign would wipe out tuberculosis from Australia.

THE HONOURABLE CYRIL CHAMBERS said that the Opposition realized that the Constitution did not make provision for the nationalization of the medical profession, and that until the people of Australia consented to an alteration of the Constitution for that purpose not one member of the present Opposition would stand for such a proposal. He referred to the fact that many children were without sufficient food and that families were being reared in single rooms under most adverse slum conditions. An end should be put to all conditions that caused ill health. The doctors had done a grand job for the people, and although they had failed to cooperate with the former Labour Government, Mr. Chambers did not malign them. Some did a much better job than others, but nevertheless all of them were attempting to discharge the responsibility that was thrust upon them as health officers. Unfortunately, the Bill did not provide for the essential needs of the community. He referred particularly to the need for dental treatment, and declared that, in his opinion, the mouth was the gateway to health. Many diseases occurred because the teeth of children had been neglected. If the people were given dental treatment, much would be done to promote their physical well-being.

THE HONOURABLE D. H. DRUMMOND, in the course of his speech, referred to the statement that had been made that the Government should supply increased dental services. He spoke only for New South Wales, and said that when he was Minister for Education in that State he had administered a school medical service. In this service dental treatment had been given to children throughout the State. He was not prepared to say whether all the children in the State were at present being treated. It was beside the point for honourable members to blame the Commonwealth if similar services had not operated in the other States. It was rather misleading for the Opposition to state that payment of Commonwealth hospital medical health benefits should not be conditional upon a patient being a contributor to a hospital medical benefit fund. The reason for this was that a certain portion of the benefit was not contingent upon membership of any fund. Mr. Drummond also referred to the distribution of free milk among school children throughout Australia, and pointed out that when he was Minister in New South Wales he had introduced the distribution of milk among school children. It had been asked why did not the Government attack the very basis of ill health. Mr. Drummond suggested that medical evidence indicated that there was nothing which provided a better foundation for good health in children than did the provision of fresh, wholesome milk. He suggested in conclusion that people should not wait until they were ill before they joined a society and expected immediate benefits.

MR. L. C. HAYLEN said that the tradesmanlike manner in which the measure had been taken to pieces by Mr. Alan Fraser, and his suggestions how it could be reassembled so that it would be nearer the desires of the Australian people was a job that had to be done, and it had been done very efficiently. Mr. Haylen referred to a statement by the Minister: "Once people cease to live, the other issues, however important they seem, no longer concern them." He characterized this as a profundity and as an utterance worthy of the great philosophers of the past. He said that the Minister had asked for cooperation. When people got into the doctor's surgery or the chemist's shop they would be met by the question: "Where are your three shillings, otherwise you do not get in." If that was the sort of cooperation envisaged by the Minister, Mr. Haylen was afraid that it amounted to compulsion of the wrong kind. He referred to the Therapeutic Substances Bill which had recently been before the House, and said that there was a lot more to it than the mere fact of a survey and an attempt to control the use of drugs. The racket that was supposed to take place under the Labour Government's socialist legislation had taken place under the partially successful "free-if-you-can-get-it medical and social benefits scheme" which the Minister for Health now lauded. Mr. Haylen referred to the distribution of free milk among school children, and said that the Minister had had the blessing of the Government and of the Opposition when he had implemented that scheme. Mr. Haylen thought that the Minister should go further and provide free orange juice for school children. Mr. Haylen said that the Opposition asked the Government to consider the sensible amendments which it had proposed. He referred to the income which had been made by the Medical Benefits Association [sic] for the previous year, and pointed out that there was a reserve of £182,407 for the year's operation. He asked what was going to happen to the money. Was it to be represented by huge assets or invested in towering buildings? More sinister still, was the money to be built rapidly and permanently into a fund for the dissemination of propaganda against a programme of social services for all, which would always remain the policy of the Australian Labour Party? Mr. Haylen began to believe that it might be put to that use. Reference had been made to the Minister's attitude in connexion with the complete freedom of doctors. Surely the first consideration in all social and medical benefits should be the individual citizen. What was the reason for this desire to lean backwards in favour of the doctors? The doctor had his rights and they would be preserved just as the rights of every ordinary citizen would be maintained. The Governments' proposal was full of holes and patches, and something about it suggested that it was not intended to be as good as it appeared on the surface. After referring to the absence of safeguards in connexion with fees, Mr. Haylen said that Australia was teeming with persons suffering from chronic diseases. There were arthritics, diabetics and heart cases throughout the community. They were a major problem for hospitals and other institutions. This scheme, instead of being one for sickness, was a scheme for the healthy. It was a gamble. However, with all its shortcomings, its complexities, its omissions, and its errors, it represented a forward move. One of the things which the Bill lacked was the provision of subsidies for chronically ill persons. It was easy enough to say that chronics were being cared for; but when the heat and excitement had died down, it would be seen how many of them were debarred from benefits for other reasons. The Labour Party, in its health legislation, had placed the mantle of safety over the sick, both the vulnerable groups and the wealthy, wherever they lived. The present Bill contained compulsion that should not be imposed, and infringements of principles. Implicit in the legislation was the fear that something would happen to a section of the medical fraternity, and it was the shadow of this fear which conditioned the plan rather than the needs of the community. If the amendment was rejected out of hand by the Government, it would drive the first nail into the coffin of its own plan. The issues that had been argued by the Opposition were threefold. The first was that the scheme was incomplete, the second was that it completely deprived vulnerable sections of the community of benefits, and accordingly that it was a travesty of justice. The third was that it did not include desirable features of earlier health schemes which had been adopted after they had been examined by joint committees of Parliament, including the Social Services Committee, upon which members from both sides of the House were represented. The Bill was a thing of shreds and patches, which consolidated nothing but the errors that the Government had already committed. Its

omissions stood out more brilliantly than did the star which the Minister had said was rising in the sky as a result of the measure. The Opposition had proposed its amendment in an attempt to help the Minister to fill in the gaps in the legislation.

MR. H. G. PEARCE said that the Opposition had directed its attack in a three-pronged fashion, first of all upon the Minister who introduced it, secondly upon the British Medical Association, and thirdly upon the Medical Benefits Fund of Australia. He thought that the people would resent the stupid and bitter attacks that had been made upon the medical profession, and he said that the attack on the Minister for Health was born of jealousy. In regard to the Medical Benefits Fund of Australia, he himself was a member of the Fund and had no grounds of complaint whatever with respect to its administration. The Fund was subject to outside audit and had all the elements of honesty. Turning his attention to the amendment, Mr. Pearce said that it had been designed to reopen the door to the old McKenna scheme, which had been found unworkable. Under the wise provisions of the Bill people would be able to have all the amenities and all the comforts that they needed, secure in the knowledge that no matter what might come into the life of a family it would be amply met and that nothing need be feared.

MR. E. JAMES HARRISON referred to a statement by the Minister for Health which he made in Parliament in 1948, to the effect that the provision of hospital accommodation and satisfactory equipment constituted the first indispensable step in any national health scheme. Mr. Harrison said that during the four years in which the Government had been in office, nothing had been done towards the attainment of that objective. He went on to discuss in detail several hospitals and several cases which had occurred in the practice of those institutions. He said that the Government had consistently endeavoured to make the National Health Service a matter of party political propaganda. He was opposed to the payment of money to medical benefit organizations until a service had been rendered to the contributor. He added that the organizations were slow in paying accounts which reached them from day to day from workers who were badly in need of money to which they were entitled. He commented on the variation in medical fees, and referred to the eastern suburbs of Sydney as compared with the western suburbs. He said that although the British Medical Association was generally believed to be one of the most closely knit organizations in the country, members of that organization varied in their approach both to treatment and charges. It seemed to him that there was an authority of some kind outside the Parliament (he was not referring especially to the British Medical Association) which could influence Government policy and decisions. He thought the amendment moved by the Opposition was a real amendment, and he challenged any member of the Government parties to prove that any part of it was contrary to the best interests of the Australian people from the medical point of view.

THE HONOURABLE WILLIAM MCMAHON said that the measure before the House was a consolidation bill which would bring within the pages of one statute the various regulations relating to national health, and the benefits made available to the Australian people by the Menzies Government. He described as a perfect *non sequitur* the remarks of Mr. E. James Harrison on the statement of the Minister made during 1948 and the present position in regard to hospitals. A statement had also been made that outside opinion had played a big part in the framing of the Bill. Mr. McMahon said that he and several of his colleagues had been on a committee that was coopted by the Minister for Health to inquire into the matter, and he wished to state that no one but his colleagues had put any pressure on him or endeavoured to induce him to have changes made in any part of the Bill. It was clear from what had been said that the Labour Party had not deviated an inch from its ideal of socialism. Running through the policy of the Labour Party were the ideas of dull servility, of the ant-state and of dependency upon others, rather than the adoption of the vital idea, so basic to liberal philosophy, of a vigorous community prepared to stand on its own feet. Mr. McMahon took the opportunity of emphasizing that in 1926 the present Minister for Health had initiated the National Health Council, which was really the beginning of the present National Health Scheme. That night they were witnessing the culmination of twenty-seven years of development in the magnificent scheme brought before the House by the Minister for Health. He went on to state that under the Labour scheme no benefits were given to pensioners, no provision was made for nutritional schemes such as the supply of free milk to school children, and no provision was made for seriously or dangerously ill persons such as those suffering from tuberculosis. He referred also to the four principles stated by the Minister for Health as being those on which his scheme was based. What appealed to him about the scheme was its simplicity and the wide range of the benefits available. Under the present scheme, when once a person had paid his premium and knew that he was entitled to comprehensive medical and diagnostic treatment, all fear that he might have in regard to medical or hospital expenses or in regard to treatment would be removed.

MR. T. W. ANDREWS said that the Bill was a direct proof of the fact that one could not serve two masters successfully. The two masters in the present case were the British Medical Association and the public. There was no doubt that a national health scheme was required and that it was universally desired. He understood that a sum of £188,900,000 had accumulated in the National Welfare Fund, yet a citizen who was sick could not benefit from that fund unless he voluntarily submitted to the flat rate imposition of the Bill. There had been very little or no consultation with the States, and for that reason the Bill was deserving of greater censure than it had received. The amendment proposed by the Opposition sought the promotion of positive health (*a*) in the establishment and maintenance of diagnostic health centres and (*b*) in the dental care of children under sixteen years of age. It seemed to Mr. Andrews that it would be utterly futile for the Minister to try to excuse himself for not accepting such an amendment. There was in fact no agreement between the British Medical Association and the Government, because the Association would not enter into any contract with the Government. In regard to the Pensioner Medical Service, there was, however, an illogical and inconsistent approach on the part of the British Medical Association. Although the Association would not enter into a contract with the Government in regard to a general health scheme, it had most certainly entered into a contract with the Government in relation to the Pensioner Medical Scheme. Mr. Andrews asked what was the possible objection of the British Medical Association to a contract in regard to the general health scheme. The Minister had stated that there was no formal document embodying an agreement between the Commonwealth and the British Medical Association relating to the provision of the Pensioner Medical Service; the arrangement was contained in a number of communications between the Government and the Association. Mr. Andrews thought that Parliament had a right to demand that the relevant file be tabled forthwith. In the Pensioner Medical Service the administration of a general anæsthetic was not included in the service, even if it was administered at the same time as other services that came within the scope of the service were rendered. The agreement did not include the treatment of fractures, nor did it cover the ingredients of an injection or the charge for after-hours services. In rural areas it did not cover payment of a mileage allowance which was covered in the metropolitan area. The scheme was nothing more than a hotch-potch scheme, which awaited the hands of an administrator who could recast it and bring it closer to the heart's desire.

MR. H. A. LESLIE said that Mr. Andrews had included in his speech a remarkable confession. He had said that all that was required, in his opinion, to make the scheme perfect was the hand of an administrator. Neither Mr. Leslie nor his colleagues could say otherwise, because they were dealing not with a proposed scheme but with a scheme that was in operation. One reason why it had been claimed that the Pensioner Medical Service did not go far enough was that no visible agreement existed between the Government and the British Medical Association. Mr. Leslie was not sure whether the Association would be in a position to enter into an agreement with the Government that would be binding upon all its members. However, the proof of the pudding was in the eating. The fact remained that the British Medical Association consisted of honourable men who had entered into an arrangement with the Government, and that the arrangement was entirely effective because both parties were observing its terms with satisfaction to the pensioners. Mr. Leslie had been intrigued by mention of the sum of £180,000,000 standing to the credit of the National Welfare Fund, which, it was claimed, should be used for the purpose of financing the existing scheme. Mr. Leslie referred to the scheme operating in New Zealand and pointed out that with New Zealand's population of 2,000,000 persons the costs amounted to £60,000,000 a year. As the population of Australia was 8,000,000, the costs of providing a similar scheme here would amount to £240,000,000 a year. The balance now standing to the credit of the National Welfare Fund would be exhausted in less than a year if it was used as the Opposition suggested. Mr. Leslie referred to the position of hospitals under the scheme, and to his experience in Western Australia, where he had been a member of

Parliament and had had experience of hospitals. He said that hospitals were now able to meet their financial commitments and also the demand for beds, and they were in a position to undertake a programme of expansion. And this had come about although the scheme had been in operation for only two years. No member of the Opposition had said that he did not want the scheme. No one was game to say that. If the Opposition was able to offer genuine criticism of the Bill, the people would listen to it and something worthwhile would be contributed to the discussion.

MR. G. W. A. DUTHIE said that Labour's national health scheme had been prevented from working from the very beginning by the British Medical Association, which had sabotaged it from its inception. The Government had succeeded with the doctors where Labour had failed, simply because the Minister for Health had capitulated completely to the British Medical Association. If he had not been prepared to do that, the Government's health scheme could not even have been begun. Mr. Duthie did not wish to make a personal attack on the Minister, who, he knew, was well-meaning. Criticism was not levelled at the Minister because it was known that in fact he was not responsible for the Bill. Criticism was directed at people outside Parliament who had walked the corridors of the building and whose efforts had resulted in the presentation of the measure. The Bill was a piebald affair. It had been presented as the Government's Bill, yet the fingerprints of the British Medical Association were on every page. Mr. Duthie had something to say about the omissions from the Bill, namely, dental care, provision for the mentally ill, and the exclusion of persons suffering from chronic ailments. Under the scheme the Government had, Mr. Duthie declared, created two huge and powerful groups. On the one hand there was the British Medical Association, and on the other hand there were the friendly societies. The people were being forced to join benefit societies from sheer economic necessity. The Commonwealth's scheme was medical conscription of a ruthless and subtle kind. Referring to Clause 3 in the amendment, Mr. Duthie said that the Government should pay all hospital fees of patients, irrespective of whether or not they were members of hospital funds. Towards the end of his speech Mr. Duthie said that the principal general criticisms that he made of the measure were that there was a quiz as to means, and that a charge was made for hospital accommodation, treatment and medicines.

MR. G. FREETH asked whether it was seriously suggested that the £186,000,000 in the National Welfare Fund was not being used and that the present Government was, so to speak, sitting on the nice fat sum which stood to the credit of the fund. Mr. Freeth went on to remark that there were limitations to the health benefits that a government could provide. Even Mr. Wilmot recognized that fact. Mr. Freeth discussed them. The first limitation was the availability of hard cash; the second limitation to any scheme was the necessity to prevent abuse and malingering, and to prevent citizens from taking undue advantage of benefits. The third limitation was the necessity to prevent a decline in the efficiency of the medical profession. The administration of the Bill would be quite simple. Few checks and counter-checks would be needed. No army of civil servants would be required to administer the legislation. The various friendly societies and funds would provide an element of competition which would ensure the maximum of efficiency in their administration, and the personal liability of the patient to pay something was in itself the best possible prevention of abuse that could be devised. After making reference to the socialistic objective of the Labour Party, Mr. Freeth said that the conscripted medical practitioner was no good to himself or to the public. Conscription would result in a lowering of the standard of the medical service. The scheme was in accordance with the theory of collective assistance to meet the sudden burdens of the individual. Reference had been made to the disabilities suffered by those who had chronic illnesses. At present, sufferers from chronic disease might not be accepted as contributors by all benefit funds, but they did receive some benefits. The reason why they could not be accepted by some benefit funds at present was that such organizations had to work out their schemes on an actuarial basis and had to build up reserves before they were able to pay out large sums of money as benefits. Mr. Freeth said that nowadays it was popular to talk about people's rights. If it was agreed that there was an individual right to rely on the community for some assistance in attaining or retaining health, it should also be pointed out that each individual had a corresponding obligation. The obligation was that he and his family must ensure that they would not be a charge on the community if it could be avoided.

MR. D. J. CURTIN said that the long delay in bringing the Bill to the second reading stage strengthened the general impression that the Minister for Health was working in collusion with the British Medical Association. When a Labour government was returned to power, which would be very shortly, the British Medical Association tall poppies would begin to understand what Mr. Chifley meant when he said:

> We are going to see that the people get free medical and pharmaceutical benefits, no matter how long the fight goes on. There will be only one finish to it. Make no mistake about that. I am not going to associate it purely with politics, I am going to associate it with the conservative outlook of the British Medical Association, and, as far as their officers are concerned, with their museum minds that refuse to move with the times, if they continue with that outlook they will be swept away and replaced.

The legislation which Mr. Chifley wrote into Australian history would be revived and carried to success by the next Labour government. Mr. Curtin said that he warned the people of Australia that the organization that was being set up could be used by the British Medical Association as a lever with which to increase doctor's fees far beyond the capacity of the people to pay. He went on to say that the old family doctor had gone. In past years the family practitioner was a kindly person who used to go about the suburbs treating the people, for nothing if necessary. Today, however, business had entered the field of medicine and doctors dealt in hundreds of thousands of pounds. Mr. Curtin predicted that before many years had passed the British Medical Association, through the Medical Benefits Fund of Australia, would control the whole of the medical field. Mr. Curtin wished to stress the point that the Commonwealth medical benefit was payable only to persons who had insured with a friendly society or a medical benefits society. That was compulsory. Although it might be only coincidental, he pointed out that doctors' fees had been increased on July 2, the day after the scheme had come into operation. The so-called National Health Scheme was, he declared, one of the most blatant frauds ever imposed on the Australian taxpayer. Mr. Curtin said that Mr. Cramer had attempted to canonize the Minister for Health. It had been a very pathetic effort. If Mr. Cramer had spoken much longer Mr. Curtin would have thought that the Minister would not be known as Sir Earle Page, but St. Earle Page. (On being called to order by the Speaker, Mr. Curtin apologized for the remark.)

MR. M. L. MCCOLM said that the health legislation would work well provided it was given an opportunity to do so. He said that the vast improvement effected in the hospital position generally would continue in the years to come. The health scheme was, in its way, the most outstanding health scheme in the world. It provided an opportunity to test the difference between two philosophies. The first was the philosophy of the complete welfare state, which was believed in by Opposition members, but which they should have the decency to admit would not work. The second philosophy was that which was responsible for the present scheme introduced by the Government with the cooperation of all sections in the community. Mr. McColm congratulated the Government on the introduction of the Bill.

MR. A. V. THOMPSON said that the Bill rather belied some of the statements made by Government supporters about socialist health schemes. The legislation bore out statements that he had made from time to time that members of the Liberal Party and the Australian Country Party, although they strongly opposed socialistic measures, ultimately adopted them for vote-catching purposes at elections. Like the parson's egg, the Bill was good in parts. Opposition members were in agreement with some parts of it and wished them to be given effect. While they agreed with what the Government was trying to do in other parts of the Bill, they did not agree with the methods that had been adopted. The Opposition was particularly concerned with paragraph 3 of the amendment, which stipulated that payments of Commonwealth hospital benefits or medical benefits should not be conditional upon a patient being a contributor to a hospital fund or medical benefit fund. As a matter of fact, he questioned very much whether any government had a right to make disbursements from revenue conditional upon the payment of contributions to some outside organization. The Opposition held that contributions to any social services fund should be made according to a person's ability to pay. Under Labour's National Service Health Bill of 1948 the Government was to pay 50% of medical expenses and the patient was to pay 50%. However, such payment by the Government was to be conditional upon the adherence by doctors to a schedule of charges. That legislation had been bitterly opposed by the then Opposition. It had been asked why the Labour Government should seek to tell

doctors how much they could charge. The present Bill did not specify the fees that should be charged by doctors, but there was a schedule which prescribed payments by the Government, ranging from 6s. up to £11 5s. Surely that indicated the recognition by the Government and by the British Medical Association of a probable scale of charges. He understood that the combined Government and insurance fund payments in respect of medical expenses would approximate 90% of such expense. Therefore the position was that where under Labour's legislation the Government was to provide 50% of medical expenses, under the present Bill the Government would provide 45% of such expenses and a further 45% would be paid from the insurance fund. In other words, in the eyes of the members on the other side of the House, whereas a 50% Government contribution was socialistic, a 45% Government contribution was not. Sir Earle Page interjected that the patient would get 90%. Mr. Thompson agreed with that statement, but said that he was speaking of the Government's contribution. The 45% that would come from the insurance fund would merely be the repayment of contributions. It was rather remarkable that the Government was satisfied with flat rate contributions to its insurance fund. The contribution was the same whether the contributor required a lot of attention or whether he required very little. Mr. Thompson admitted that the different societies had varying rates, but the variation was not great because the Minister had to be satisfied that the promised benefits could be provided for the charge that was paid. After referring in some detail to Clauses 14 and 15 of the Bill, Mr. Thompson said that the whole matter boiled down to the fact that unless the rules of the society provided that the contributor might receive a fund benefit under the schedule, he would receive only the Commonwealth benefit. Mr. Thompson went on to remark that the Minister had said that doctors were cooperating in the scheme. Mr. Thompson had found that unfortunately many doctors failed to supply detailed information that was required. He said that there would be no difficulty if every doctor specified on each account the nature of the operation that had been performed. Mr. Thompson also referred to patients with chronic ailments. He said that the House had been informed that people who had been contributing to the society for medical benefits prior to the introduction of the Government's scheme would be eligible for benefits in respect of chronic illnesses. That was true. The society of which Mr. Thompson was a member, when it joined the Government scheme, had announced that members who had been contributing to its medical fund previously would be entitled to transfer to the new scheme regardless of their age and the nature of their complaints. However, other people who suffered from chronic ailments were not eligible for benefits from the registered society under the scheme in respect of those ailments. Mr. Thompson emphasized the statement that persons with chronic complaints who joined societies were not eligible to receive refunds of 6s. a visit from the society in connexion with those complaints. Furthermore, they could not receive the 6s. Government subsidy unless they paid full subscription rates to an approved society. That was where the Opposition came to grips with the Government. The Opposition believed that in the case of sufferers from chronic ailments approved societies should be authorized to refund to the patient 12s. in respect of each visit and that the Government should reimburse the society on that basis. That would overcome the present position. Mr. Thompson also stated that although the Minister derived some pleasure from the fact that the Government had been able to reach agreement with the British Medical Association, the Minister knew as well as Mr. Thompson did that that Association was still opposed as strongly as ever it had been to accepting money from the Government other than in relation to special cases, such as pensioners and a few others.

SIR EARLE PAGE, in speaking to the amendment, first of all congratulated Mr. Thompson on his practical and constructive speech. It had been a pleasure for him to listen to it. He said that the amendment had been moved by the Opposition in an attempt to destroy all the progress that had been made in relation to health matters during the previous four years, and to bring about a reversion to the chaotic conditions in relation to health and medical services that had existed in 1949. Sir Earle Page referred to several points in the amendment. In regard to the suggestion that diagnostic and health centres should be established, he said that these had been established in Australia for the previous thirty-four years. The continent was studded with them. There were diagnostic centres in Townsville, Albury, Bendigo, Lismore, Tamworth and many other places. The centres were and had been of great value to the people of the country. Further, in Clause 9 of the Bill it was stated that the Governor-General might provide, or arrange for the provision of, diagnostic and therapeutic services for medical practitioners and hospitals. The amendment referred to the establishment of health centres. Sir Earle Page said that it had been considered that about 20,000 health centres had been required in Great Britain and that they were regarded as indispensable. When he was recently in England he had asked how many had been established, and the reply was that one would be finished in the present year and that two might be in operation in the following year. The British Government was spending £515,000,000 a year on health services. If with such an expenditure Great Britain had not yet been able to establish more than one health centre, it was hard to know how long it would be before Australia could establish sufficient health centres in the country to be of much value. Sir Earle Page was of the opinion that the reference in the amendment to the establishment of health centres was only a pious expression of hope. The question had arisen in Great Britain and New Zealand whether health centres were really wanted by the people. What people really wanted was not a place where they could see six or ten doctors, but a family doctor in whom they had confidence. In regard to that part of the amendment dealing with the dental care of children, Sir Earle Page said that members who had formerly been members of State Parliaments had pointed out that a system for the dental care of children had been in operation in the States for many years. Sir Earle Page had examined the files of his department for earlier years and he had found that when recommendations had been made some years before for the implementation of a scheme for the provision of free dental treatment to children it had been found impossible to institute anything of the kind, because such a service would have required the services of 1700 more dentists than were in Australia at that time. The amendment also urged the provision of medical training and research facilities and a system of regional hospitals. Sir Earle Page said that during the 1930's he had established a National Health and Medical Research Council. Under the Chifley Government the grant to that body had been £55,000 a year and at the present time it was something like £144,000 a year. This meant that the Opposition had suggested, in effect, that the Government should establish an organization which had been in existence for about twenty years. The amendment also referred to the improvement of medical training facilities, but Sir Earle Page maintained that these things had been done. In regard to hospitals, Sir Earle Page said that as a result of the Government's scheme the hospitals in Australia were becoming free of debt. Yet the Opposition had advocated that the hospital benefits under the scheme should be wiped out because they conflicted with the ideology of the Opposition. He wished to know who cared for ideology when people could not find hospital beds, when proper equipment could not be provided for sick people, and when hospitals could not be built. In regard to the mentally ill, he said that the present Government had tried to deal with the problem under a joint arrangement in an endeavour to bring an element of decency into the system for the care of the insane. In regard to the payment of mileage for visits to pensioners, he explained that at the present time the rate of four shillings a mile was paid to a doctor in respect of a visit to a pensioner. It had been repeatedly stated in the debate that aged persons were not covered by the scheme. Sir Earle Page pointed out that every benefit organization in Australia had removed the age limit from those who participated in it, and therefore aged persons were covered. Moreover, persons suffering from chronic diseases were gradually being covered by the Commonwealth benefits through approved organizations. It would take time for some of the organizations to cover all chronic sufferers, but the Government would not register an organization unless it guaranteed that any particular member who developed a chronic disease after he had been insured with the organization would be regarded as having developed an acute illness and would receive the full Commonwealth and medical and hospital benefits. In reply to an interjection that the organizations had not accepted the Government's direction on that point, Sir Earle Page said that they had to accept it, because no organization would be registered unless it did. In regard to conferences with the medical profession, Sir Earle Page said that if the Opposition wanted advice it went to experts in a particular field, such as union secretaries, lawyers and so on. When the Government wanted advice on medical matters, it approached the experts in medical matters, who were the doctors. He suggested that it was the only logical and reasonable thing to do. He had gone to those who were carrying out medical practice and had discussed the medical scheme with them; but that did not by any means indicate that all the advice given had been accepted by the Government.

DR. H. V. EVATT, in the opening part of his speech, said that members of the Australian Country Party had tried to prevent the national Parliament from obtaining power over social services. He referred to statements made by the

Treasurer, Sir Arthur Fadden, in the campaign speeches of 1946. He said that the Bill illustrated the sham, humbug and hypocrisy of the Minister for Health. The Minister had held the health portfolio for the greater part of a generation, but what had he done to produce a national health scheme? Dr. Evatt suggested that he had done nothing. The Minister's second reading speech had contained not a single reference to the detailed application of the National Health Scheme. It was merely a series of extravagant assertions about the success of the scheme. Dr. Evatt summed up the action which the Chifley Government had taken to place national health upon a proper foundation. First of all, it had established at the University of Sydney a chair of child health for the training of specialists in children's diseases and for the promotion of research. Secondly, it had established a unit of industrial hygiene to train medical practitioners in industrial hygiene. Thirdly, it had established the great principle of public hospital benefits. Fourthly, it had established private hospital benefits. Fifthly, it had established mental hospital benefits, whereby patients and their relatives were relieved of the obligation to pay for treatment in mental institutions. Sixthly, it had provided unemployment and sickness benefits for the first time in the history of the country. Seventhly, it had introduced a scheme for the eradication of tuberculosis from Australia. The plan had included the provision of allowances to sufferers from the disease. The Minister for Health had failed to give his political opponents any credit whatever for what they had done in this regard. The Chifley Government's health scheme had included a wide range of pharmaceutical benefits, but that scheme had broken down because medical practitioners would not sign prescriptions, so that patients whom they were treating could obtain medicines which would be paid for by the Commonwealth. Dr. Evatt said that no one had a higher opinion of the medical profession than he had, but that the profession was controlled by a few individuals in the central council of the Association, and the medical practitioners obeyed that council. The final achievement of the Chifley Government to which he wished to refer was the free provision of immunizing agents against diphtheria and whooping-cough, and the establishment of rehabilitation centres for disabled civilians. He pointed out that even those portions of the Menzies Government scheme which had been successful, and which they all welcomed despite the abuses which they allowed, could not have been operated without the power granted as a result of the referendum in 1946. In regard to the proposal for the establishment and maintenance of diagnostic and health centres, Dr. Evatt said that they would provide for a decision on the nature of the patient's illness at an earlier stage, instead of the patient having to wait until a claim was made in the majority of cases either through an insurance company or some society, and then being rushed into hospital and out again. Dr. Evatt denied that the dental care of children was taken care of in the States. He held that the dental care of children formed the basis of the health of an adult. He also referred to the proposal for the provision of treatment for patients suffering from mental illness. He said that if the reports that were read were correct, the conditions associated with the treatment of mental disease in some of the States was scandalous. The amendment represented a practical approach to a great national problem. There could be no socialistic nationalization of the medical profession. If the word "socialism" was used in the sense of intervention by the State, it could be applied to the present scheme. Discussing the question of the means test and the admission of patients to beds in public hospitals, Dr. Evatt said that there should be no question of a means test. The Government talked about the abolition of a means test when it suited it, but it rejected a system under which there was no means test. The amendment also provided that the payment of Commonwealth hospital benefits or medical benefits should not be conditional upon a patient being a contributor to a hospital or medical benefits fund. He thought that this was the most important proposal. On the Minister's own admission, any person chosen at random from the community might be covered by the scheme; but the next person might not be covered. That was why the Australian Labour Party had proposed the amendment in relation to the payment of Commonwealth hospital benefits or medical benefits. Dr. Evatt was not prepared to go into the question of the legality of the scheme, but he said that it was a doubtful proposition at the best. The scheme was not a national health scheme because it did not cover the nation, and everybody in the country should be covered. The Opposition held that registered organizations should be subsidized to ensure that benefits would be extended to chronic sufferers and to those suffering disabilities at the commencement of their membership of a registered organization. Dr. Evatt concluded his speech by saying that the Minister had not replied to the constructive proposals contained in the amendment.

MR. F. M. OSBORNE said that it was an absolute travesty for the Leader of the Opposition, Dr. Evatt, to speak of constructive suggestions coming from the Opposition. The Opposition had offered nothing but destructive criticism. The Chifley Government had only two achievements in the field of national medicine — ruined hospitals and antagonized medical practitioners. As far as Mr. Osborne could see, the objections of Dr. Evatt to the Bill appeared to be threefold. In the first place, he objected that it did not centralize everything. In the second place, he thought that the Government had not done everything at once; and thirdly, he objected that credit had not been given in the debate to the pioneering achievements of the Chifley Government. Mr. Osborne had already mentioned what those achievements were. Dr. Evatt had denied that the question was one of ideology. Mr. Osborne was not surprised that he should have said this because he was engaged not only as his own party knew, but also, as the country was rapidly learning, in the interesting pastime of sitting on a political fence. The trouble was that it was the absence of regimentation in the Bill that the Opposition had such difficulty in swallowing. Mr. Osborne was well content that the people should judge the scheme while it was in operation. The Opposition had condemned the Government's scheme, but what were the alternatives that there were to it? Mr. Osborne thought that they were four in number. The first was a capitation fee service, known as the panel service in England. The second was a fee for services such as existed in New Zealand. The third system was a composite of the capitation fee service and the salaried service, such as the Bevan scheme in England, and the final alternative was the salaried medical service, which was the worst of all. Mr. Osborne agreed that under the existing scheme the individual was encouraged to insure himself against the day when he would require medical and hospital treatment. The sooner Australians could be encouraged as a whole to accept at least a small degree of responsibility in order to safeguard the welfare of themselves and their families, the better it would be for the country. Mr. Osborne concluded by posing the final question about the Bill: "Will the scheme work?" His answer was that it would work and was working.

MR. GEORGE LAWSON said that in common with other members of the Opposition he agreed with the principles of the measure, but added that it did not go far enough. His main objection to the measure was the fact that it did not provide complete coverage for all those who were entitled to hospital and medical benefits. The Bill was only a follow-on of earlier legislation passed by the Labour Government. In his opinion the best feature of the Bill was the provisions relating to pensioners. Mr. Lawson spent some time discussing the hospitals in Queensland. He said that for three months Queensland had been refused the eight shillings a day Commonwealth subsidy for every reoccupied hospital bed, but he was glad to say that the Minister for Health had eventually capitulated and that hospitalization in Queensland was still free. The Minister had endeavoured to compel the Queensland Government to abandon its free hospital system and to make a charge for all patients who entered hospital. Mr. Lawson concluded his speech by saying that the Minister had tried to make the House believe that the people accepted the scheme holus-bolus without complaint, but it was obvious that a lot of complaints were being made about it. The people had accepted the scheme only on the basis that half a loaf was better than no bread. When the Labour Government came into power at the next general election the country would have a comprehensive and satisfactory health scheme.

MR. K. C. WILSON said that the Government stage by stage was implementing the magnificent policy announced by the Prime Minister in 1949. The Bill was the culmination of that policy, in so far as it related to health matters. The amendment before the House largely provided that the Government's plan should be scrapped. If it was carried it would completely destroy the plan that had been produced by the Minister for Health.

MR. ERIC J. HARRISON moved that the question be now put. The House divided and the question was resolved in the affirmative. The amendment was then put to the House and negatived.

The original question was resolved in the affirmative. The Bill was read a second time and committed *pro forma*; progress was reported.

Consideration in Committee.

The clauses of the Bill were considered *seriatim* in committee. Amendments were moved to some of them, but no amendment was accepted by the House. The Bill was reported without amendment and the report was adopted.

Third Reading.

The Minister for Health proposed: "That the Bill be now read a third time."

The question was resolved in the affirmative and the Bill was read a third time.

THE SENATE.

The Bill was received by the Senate from the House of Representatives on December 1, 1953.

First Reading.

On the motion of THE HONOURABLE W. J. COOPER the Bill was read a first time.

Second Reading.

SENATOR THE HONOURABLE W. J. COOPER moved: "That the Bill be now read a second time."

Senator Cooper read a second reading speech, which was to all intents and purposes identical with that made by the Minister for Health in the House of Representatives.

SENATOR A. M. BENN said that the Government had introduced a National Health Bill in March, 1953, and this had been followed by a Senate election. They all knew that a general election would take place before very long, and now a second National Health Bill was introduced, and the Minister had delivered a very long second reading speech. For all they knew, still another National Health Bill might be introduced before the general election. It was obvious that one group of people in the community was deliberately deluding itself in connexion with the matter, and the Government was attempting to delude the people as a whole. The main provisions in the Bill before the House had been dictated by the British Medical Association. The main provisions of the Bill would not have been framed in their present form without the approval of the British Medical Association. That Association had been virtually authorized by the Government to exercise job control. The British Medical Association had a callous outlook towards the curing of the sick members of the community. The Minister had made reference to the doctor-patient relationship. That was a relationship in which the doctor provided the skill and the patient provided the fees. It did not extend beyond that. The Association had an aversion to a health scheme because it savoured of Government control. Its main objection to the scheme inaugurated by the Labour Government was that in some way the service of British Medical Association members would be subject to some degree to Government control, and that the fees that they could charge would be fixed by the Government. The present scheme was a wishy-washy health scheme. Senator Benn went on to state that directly and indirectly the Government would control the whole of the operations of approved organizations. Therefore the officers employed by these organizations would be in effect Government officers. The scheme was thus in effect a socialized scheme. Senator Benn then went on to make reference to the approved organizations, to the payments that would be made to members of approved organizations, to the disciplinary committees which were to be set up, and to the fact that the committees would consist entirely of members of the British Medical Association, and would ignore the normal rules of evidence. He referred also to the exclusion of persons suffering from chronic complaints, and had something to say about the desirability for inclusion of persons suffering from silicosis, lead poisoning and dermatitis. He concluded by moving a set of amendments, which were identical with those moved in the House of Representatives, except that numbers 3, 7 and 8 moved in the Lower House were omitted.

SENATOR K. McC. ANDERSON said that he supported the Bill. He regarded it as a committee Bill. It had 139 clauses and its schedules covered 30 pages. He deplored the attack made on the medical profession by Senator Benn, and he pointed out that medical men did not retain for themselves the specialized knowledge which they acquired. They passed it on for the benefit of the great suffering public. For this reason Senator Benn's remarks were quite unfortunate. Senator Anderson then traversed broadly the provisions of the Bill and referred to the free immunization of children, the provision of free milk, the campaign against tuberculosis, the administration of life-saving and disease-preventing drugs and the Pensioner Medical Service. He said that an outstanding feature of the National Health Scheme was that it did not disturb the existing relationship between patients and doctors. He also drew attention to the favourable effect which the measure would have on the financing of hospitals.

SENATOR THE HONORABLE DONALD CAMERON said that he had been most impressed by the statement in the Minister's second reading speech to the effect that the most important thing in the world was individual and national health. He was also impressed by the statement that a national health scheme, to be permanently successful, had to be something more than could be stated in figures or money; it had to have substantial social and moral values, which were intangible and not measured in terms of money. Senator Cameron then went on to quote certain passages from Alexis Carrel's book "Man the Unknown". He included in his quotation passages dealing with natural and artificial health. Carrel held that man needed natural health, which meant that he should be so constructed as to be able to live without thinking about his health. Senator Cameron said that Carrel had challenged most convincingly orthodox ideas of health on which the Bill was based. The Bill made no attempt to establish the difference between cause and effect. It dealt essentially with effects and made no reference at all to causes. After discussing Carrel's book he went on to say that he accepted the Bill in principle, but believed that in practice it would do but little good. Later on in his speech he said that the Bill contained nothing that commended it to him. Senator Cameron deplored the absence of any mention in the Bill about eye treatment. He said that all the scheme would do would be to patch up defective humanity, whose ills had been caused mainly as a result of the defective system under which the community lived.

SENATOR J. A. McCALLUM said that Senator Benn and Senator Cameron had not read the Bill carefully; otherwise they would not have spoken as they did. Senator McCallum then enumerated the free services which were provided under the Bill. He said that the purpose of the measure was to avoid a scheme that was based simply on a handout by the Government. It was his experience that what was given freely was not valued nearly so highly as that for which some payment had to be made. Senator Benn had completely misunderstood what was meant by the doctor-patient relationship. This wholesome and necessary relationship had been preserved by the Government in the Bill. The Government was undoubtedly building up individual character. The whole purpose of the scheme was that the Commonwealth would help everybody who was in need, but would give the greatest measure of help to the person who helped himself.

SENATOR S. W. O'FLAHERTY seconded Senator Benn's amendment. He said that it had to be admitted at once that the plan advanced by the Labour Party had not provided for the payment by the Government of 90% of a patient's medical bills. But this Government's scheme made no such provision either. The present measure was not a national health scheme at all; it excluded far too many persons. The scheme took no account of the man who was in financial difficulties and could not keep up his payments, although he might have paid into the society for two or three years. The British Medical Association was a highly political body. It was opposed to anything that the Australian Labour Party would attempt to introduce. It had opposed the Australian Labour Party's scheme for the provision of medicine. Its opposition then had been political. It set out deliberately to break down the medical services of Australia. This Government proposal was the British Medical Association scheme, and it provided everything for the doctor. Everything went to the doctor. The persons who were outside the age and invalid pensions schemes and who had not the ability to pay insurance would get nothing. The Government merely proposed to grease the fat pig, and in this case that was the doctor. This Bill was a propaganda bill. The Government talked about removing the means test from social services, but it had enforced the means test in hospitals after the Labour Government had abolished it. The health scheme would not benefit those who needed attention. It should be called a scheme for the purpose of helping doctors for their own benefit to exploit the sick people of Australia.

SENATOR ANNABELLE RANKIN said that she wholeheartedly supported the Bill. The doctor-patient relationship should not be impaired in any way. Senator Rankin then dealt with the main features of the Bill, laying special emphasis on the free distribution of milk to school children. She said that just as age pensions, invalid pensions, child endowment, widows' pensions and all similar social services were now earned rights, she believed that under this Bill the provision of hospital facilities became the earned right of every family. She referred to the hospital systems in the several States, and compared those of New South Wales and Victoria with the hospital system in Queensland, showing that New South Wales and Victoria lagged behind Queensland in the number of available hospital beds. She insisted that if the scheme was to be effective and was to provide the people of Australia with the services to which they were

entitled, the States had to play their parts in providing the necessary hospital beds.

SENATOR D. R. WILLESEE said that Senator Cooper (the Minister for Repatriation) in his second reading speech had not established a desirable atmosphere in which the remainder of a subject of such magnitude might be discussed. A very grave disservice had been done to the community by the manner in which the subject had been allowed to drop so deeply into the realms of party politics during the last eight or nine years. He said that the Minister's speech had contained many platitudes, and he quoted instances from it, in which he held that this was so. The Minister claimed that insurance averaged the risk in the national partnership. An individual who suffered from prolonged illness was vulnerable from the economic standpoint, because friendly societies and approved organizations paid his hospital expenses for only eighty-four days in a year. If a person was confined to a hospital bed for twelve months, the scheme would not cover his expense for 281 days of that period. Senator Annabelle Rankin had referred to what she called "earned rights". Senator Willesee said that medical benefits would be an earned right even if people had not paid a special tax into the Government's coffers and a special contribution to benefit organizations for them. There was no need for the Commonwealth to become involved in small transactions. It should say to every member of the community: "We shall not allow you to bear the expense of a long and costly illness. That will be our responsibility. In other words, it will be the responsibility of the whole community." If it was possible to smooth out some of the eddies and whirlpools of the Government's scheme, they could say to every basic wage earner in the Commonwealth that he should be responsible for the first five pounds of the medical expenses of any one year, but the Commonwealth would pay for any costs over and above that amount. Of course, for this it would be necessary to apply a means test. The plan would have to be based on the calculations of Treasury experts, but Senator Willesee thought it would be much less burdensome on the Treasury than was the present scheme. Senator Willesee's plan presupposed a fixed scale of medical fees. Senator Willesee asked what was to be the future of hospitals in Australia, particularly private hospitals. He asked whether inflation had completely destroyed the possibility of hospitals continuing to be operated by members of religious denominations or other groups. In regard to sufferers from chronic ailments, he referred to the fact that in the United States of America and other parts of the world a properly equipped van staffed by doctor and nurse called at the homes of such sufferers once a week or at other specified times. By that means chronic sufferers could be treated at home and the hospital accommodation could be relieved. He had heard no suggestion that the Government proposed to adopt such a scheme. It was futile for the Government to contend that the proposed legislation represented a great achievement, because the very people who should be protected by it were those who would not be protected.

SENATOR IVY E. WEDGWOOD said that she supported the Bill, and congratulated the Government on having put into operation a scheme that had been acclaimed as the best in the world. Senator Wedgwood said that illness was hardest on people in the lower income group. It was important that some assistance should be given to every person who was ill. Illness placed an intolerable burden upon the family man. No Government could entirely remove the economic difficulties resulting from illness and accident, but the Government had sought to reduce their effect by the best-known method, that of insurance. In regard to the tuberculosis campaign, she agreed that the Labour Party was entitled to a share of credit in respect of the scheme, because legislation had been passed by Parliament as far back as 1948.

SENATOR C. B. BYRNE said that much of the Minister's second reading speech had been quite unintelligible. It was clear that the measure could not stand on its own feet but had to be introduced with language sufficiently embellished to divert the minds of Senators from its many defects. The fundamental difference that existed between the thinking of Government supporters and that of members of the Opposition in relation to the scheme was whether services of the kind under discussion should be provided free to the public or whether they should be paid for by individual citizens under a system of the kind that had been devised by the Government. By being provided free, Senator Byrne referred to the financing of the services from consolidated revenue. There had been two principal goals towards which people irrespective of party had striven with tremendous effort. One approach was to education. The Minister had said that education was not so important as health. Senator Byrne said that if the Australian people believed that education should be free, he could not see what their objection was to a free health service. To him it was a matter of sheer and plain logic. He then went on to discuss the position of hospitals in Queensland. The Queensland Government had recognized the right of every person to adequate medical and hospital treatment, and the system had become part of the tradition of the State and of the Labour Government. The more adequate hospital provision in Queensland was due to a higher sense of public duty coupled with capable financial administration. Senator Byrne said that he had outlined the position in Queensland because it contradicted the Minister's claim that modern hospitals could not be constructed in the absence of a scheme such as the one which he had outlined. In regard to the provisions of the proposed legislation, Senator Byrne drew particular attention to the absence of any mention of provision for unemployment and sickness benefits.

At 5.1 p.m. on December 2, 1953, SENATOR THE HONOURABLE GEORGE MCLEAY moved that the Bill be declared an urgent Bill. This motion was carried by a majority of two. Senator McLeay then proposed that time should be allotted in connexion with the consideration of the Bill as follows: (*a*) for the second reading of the Bill until 10.30 p.m. on that day; (*b*) for the committee stage of the Bill until 2 a.m. on December 3; (*c*) for the remaining stages of the Bill until 2.10 a.m. on December 3.

SENATOR THE HONOURABLE N. E. MCKENNA said that the Minister in his second reading speech had declared that the Bill was a most important bill, but quite obviously the Minister did not believe his own statement, because after only four or five members of the Opposition had spoken the Government now proposed to "guillotine" the measure. The Opposition had hoped to move some 22 amendments dealing only with the highlights of the Bill. As the Senate was to be allowed only 180 minutes to consider those amendments, the proceedings were being reduced to a farce. What was being done was not only a gross abuse of Parliamentary procedure, it was also an absolute affront to democracy. He wished to record his emphatic protest against the Government's action.

Similar protests were made by SENATOR THE HONOURABLE W. P. ASHLEY, SENATOR J. M. SHEEHAN, SENATOR J. O. CRITCHLEY, SENATOR S. W. O'FLAHERTY, and SENATOR THE HONOURABLE D. CAMERON. The question was put and carried by a majority of three.

SENATOR J. E. MARRIOTT characterized the measure as a very fine national health scheme. He then made reference to the McKenna National Health Plan and said that only chaos had resulted from it. He asked the Leader of the Opposition, Senator McKenna, who had been Minister for Health in the previous Labour Government, to explain why that Government had not paid allowances to sufferers from tuberculosis. He understood that at a conference of the Australian Labour Party held in Tasmania during Labour's régime a resolution had been passed demanding that the Australian Government should take action in that direction. One of the principal attributes of the Government's health scheme to which the Bill gave legislative effect was that it provided a bulwark against the nationalization of the medical profession. The measure before the House provided for the development of a partnership between the Commonwealth and State Government Insurance Companies and the medical and pharmaceutical professions. The shareholders of the partnership were the 5,000,000 Australians who were members of national benefit organizations.

SENATOR J. J. ARNOLD said that all the Bill before the Senate sought to achieve was another way of paying the doctor. It did not propose to make the slightest change in the present medical system. He asked whether the Minister suggested that the only problem which affected the health of the nation was how to find money with which to pay the doctor. If he did, he was one of a very small minority. Senator Arnold regretted the passing of the friendly societies as they had been known, and the substitution of a scheme under which those who contributed would have little say in the distribution of the benefits. The scheme which was set up was intended to destroy the friendly societies and to set up in their places a scheme which would be more costly and which would provide fewer benefits. Senator Arnold remarked that there was no indication that the resources of the Australian Government would be directed towards improving the training of medical men. He hoped that the Government would give earnest consideration to the amendments which were to be proposed by the Opposition.

SENATOR A. R. ROBERTSON said that he supported the Bill. He remarked that when the British Medical Association opposed the scheme of the Chifley Government it had struck

a blow for liberty and democracy in Australia. Senator Cameron had remarked that the scheme was not perfect. Senator Robertson asked where was the perfect scheme. He said that anomalies were gradually being ironed out. This was true in regard to all that had been said about persons suffering from chronic illnesses. It was in his opinion a ridiculous thing to say that healthy persons would not need to insure under the scheme. Surely it was realized that the average person would naturally make provision against the possibility of accident or sudden illness. There could not be a very great deal wrong with the scheme when it had found approvad by representatives from 53 different countries.

SENATOR THE HONOURABLE N. E. MCKENNA said that the measure was the successor to its stillborn predecessor introduced into the House of Representatives in March, 1953. That measure had been undebated for a period of seven months, until it was decently interred by the prorogation of the Parliament early in November. The March Bill had been mere window-dressing and political stunting on the eve of the Senate election. This was obvious on account of the many differences between the March measure and the Bill now before the Senate. The Bill did two main things. First, it incorporated some of the enabling provisions of Labour's *National Health Service Act*. Secondly, it embodied in legislation certain provisions that were contained in regulations at the moment. The second reading speech delivered by Senator Cooper, which was really the speech of the Minister for Health, had been most extraordinary. It had done everything except explain the contents of the Bill. Senator McKenna did not agree with the Minister's view that good health was the first priority in the whole world. He believed that peace of mind, of which good health was a contributing factor, was the most important thing in the world. The Minister had stated that the consistent pursuit of health by all the governments and people of the world might well be the magic talisman that would lead to universal peace. If such claims even began to be true, Senator McKenna suggested that the Minister for Health should take the place of Sir Winston Churchill and President Eisenhower and be sent to resolve the world's problems with Mr. Malenkov. Senator McKenna went on to state that false claims had been made. It was not true that the Government's National Health Scheme had first provided free immunizing agents. This had been done in 1947, nearly three years before the present Government came to office. The Government claimed without any sense of propriety all the credit for the actions of its predecessors. In regard to the campaign against tuberculosis, this had originally been born in the mind of the present Director-General of Health, Dr. J. E. Metcalfe. It had borne fruit in the appointment by the Labour Government of Dr. H. W. Wunderly to the charge of the Tuberculosis Division of the Department of Health, which was established by the Labour Government. This had led to the evolution by Dr. Wunderly primarily of a complete medical and surgical and social approach to the great problem. The scheme of tuberculosis allowances had been instituted by Labour on a minor scale at the beginning, and when the present Minister took over there was lying on his table a statement setting out a scheme for the payment of increased tuberculosis allowances, approved by the Government of the day. The disgrace was that it had taken the present Minister six months to implement it. Senator McKenna then enumerated the five different types of benefits mentioned in the Bill. He said that the Opposition had no quarrel with them; they had initiated them, they had sponsored them, and promulgated them, and they had gone through the whole process of pioneering this new idea in the face of all the conservatism that was abroad. Labour had been the pioneer of the benefits and thus they approved them. The quarrel with the Government was about the method that it had chosen to implement them. Senator McKenna then went on to praise the Pensioner Medical Service; but he added that there was not one single line or one word in the whole of the Bill which gave any indications whatever of the nature of the benefits. He had asked the Minister to produce the agreement which he had made with the British Medical Association and had been told that it consisted of letters that had been exchanged between him and the Federal Council of the British Medical Association. He thought that if the Opposition was prepared to adopt this hole-and-corner business by the Minister for Health, they would be absolutely recreant to their duty. Senator McKenna then went on to explain to the Senate the way in which the Pensioner Medical Scheme operated. He mentioned the fees of 9s. and 11s. for consultation at the surgery and visit at the home, and also the rate of 5s. a mile which was payable. He said that good and commendable though the scheme was, it did not go very far. Senator McKenna then dealt at length with the Pharmaceutical Benefits Scheme, and said that though it was completely desirable, it was nevertheless not a specific contribution to positive health. It provided for the treatment of disease rather than its prevention. In regard to the Medical Benefits Scheme, he reminded the Senate that no uninsured person could receive a farthing under the National Medical Benefits Scheme. The vital weakness of the scheme lay in the fact that it provided for no administrative control. It was clear that the scheme could be used or abused so as to provide a benefit to the doctor and confer no benefit on the patient. It was known that the British Medical Association had begged its members not to raise their fees. The scheme had been completely misdescribed as a National Medical Benefits Scheme, because it discriminated between people, between those who had insured themselves and those who had not. The scheme would bring into the field a whole group of new organizations, many of which would be concerned only with providing jobs, building up staffs and taking people away from industry. In the matter of hospital benefits, Senator McKenna referred to what had been done by the Labour Government. Under the Labour Government scheme, not only did the patient pay nothing, but also he was not quizzed concerning his means. Under the present scheme he paid taxes as well as contributions to a recognized organization. When he collected his benefit he was not permitted to retain it, but passed it over to the hospital. The position of the patient under this restricted scheme was worsened very seriously. Senator McKenna found much consolation in the fact that the British Medical Association was now prepared to accept a greater degree of social responsibility than it had when the Australian Labour Party was in office. He was not suggesting that the Association was opposed to the Labour Government simply because it was a Labour Government. He thought that it had been reassured by several things. As the result of a decision of the High Court of Australia, the Association knew now that medical practitioners could not be conscripted. It knew that there could be no socialization of medicine in the country. It feared that, and it also feared the new concepts and ideas. Its fears had been understandable; but it was obvious that it had been reassured. Medical practitioners were now using the prescribed forms. In Senator McKenna's time they had objected to the use of official forms. Now they used them freely. The doctors had also accepted limitations in regard to prescribing. They lodged claims with and collected monies from the Government, which they would not do previously, when their attitude had been that they would not deal directly with a government of any political colour. It was consoling to notice that they had abandoned that principle in relation to the Pensioner Medical Service. He hoped that in the interests of an efficient and economical scheme the British Medical Association would cooperate on somewhat the same basis in the wider scheme of medical benefits. Senator McKenna thought that it was highly desirable to encourage people to insure themselves, but he suggested that it was completely wrong to compel them to insure. Senator McKenna then referred to the achievements of previous Labour administrations. Amongst these achievements were the conferring of adequate powers upon the Australian Government to implement health schemes. He also mentioned the initiation of the tuberculosis scheme and the establishment of a chair of child health at the University of Sydney as well as a unit of industrial hygiene. The Labour Government had also provided public hospital benefits, private hospital benefits and mental hospital benefits. It had established rehabilitation centres and acoustic laboratories. The Labour Government had pioneered the dental scheme which was operating free of charge for the children of Canberra. He concluded on the note that there was nothing in the Government's five health benefits scheme of which it could be proud. The people of Australia could find little in the scheme with which they could be satisfied.

SENATOR J. G. GORTON said that Senator McKenna had complained that the Opposition had not had sufficient time allowed them for discussion of the Bill. He said that it was admitted by the Opposition that the Bill was designed to provide statute in place of regulations that had been in force for four years. During this period of four years the Opposition had had full and ample opportunity to debate the regulations and to move for their disallowance. It was also not true that the Minister had not given credit to the Opposition for its operation of tuberculosis payments and the tuberculosis services of Australia. In his second reading speech the Minister had clearly stated that the Bill under which these claims were made had been introduced and passed in 1948. It was also true, however, that when the present Government achieved office no agreement had been made with the State of New South Wales or that of South Australia to pay the benefits in question, and for that reason they had not been paid. It was only since this Government had achieved office that the benefits had been paid. One

reason why the Government had been compelled to introduce the present legislation piecemeal was that when it achieved office the present Opposition had a majority in the Senate. That majority had been used with a capriciousness and a ruthlessness that had never been surpassed in the history of the Australian Parliament. Senator Gorton then went on to deal with the four main provisions of the Bill. He stated one incontrovertible fact—that when the Government had achieved office practically no Australians were drawing any benefits to help pay their doctors' fees. The second fact to be emphasized was the fact that benefits were now being drawn by the citizens of Australia under a health scheme. Senator Gorton then discussed the four ways in which the scheme worked. He dealt first with the headings which had nothing to do with insurance—namely, the Pensioner Medical Service and the Pharmaceutical Benefits—and then he dealt with medical benefits and hospital benefits. He said that no one would suggest that the last word in national health had been written in this measure. He would like to see the friendly societies make an actuarial survey, to see whether it would be possible without raising premiums, or perhaps by increasing them slightly, to insure patients against the present range of risks and also against the risk of going insane. He would also like to see—and here he found himself in agreement with some members of the Opposition—an actuarial survey made to ascertain the cost of protecting people against a crippling blow, such as an illness which involved the payment of expenses amounting to, say, £300 or even £500 in a year, or two years, and also necessitated a patient entering hospital for months on end. These were things which could be added to the scheme and which he felt sure would be added to it.

SENATOR W. E. AYLETT said that Senator Gorton had not spoken the truth. He asked whether Senator Gorton had never heard of the free hospitals that were in existence before the present Government was elected. He wondered whether Senator Gorton was not aware that under the Labour Government free hospital treatment was provided without any means test whatever. He wondered also whether he was not aware that under Labour's National Health Scheme free medicine was available at public hospitals throughout the Commonwealth. He also stated that medicine was free on a doctor's prescription in parts of Tasmania.

The President stated that the time allowed for the debate on the motion for the second reading had expired.

The amendment moved by Senator Benn was then put, and the question was resolved in the negative.

The original question was then resolved in the affirmative.

The Bill was read a second time.

In Committee.

Several amendments were proposed in the Committee stage, but only those which were adopted will be recorded in this place.

SENATOR THE HONOURABLE W. J. COOPER referred to Clause 8. Clause 8 is as follows:

> 8.—Notwithstanding the repeal effected by the last preceding section—
>
> (*c*) the National Health (Medicines for Pensioners) Regulations, made under that Act, as in force immediately before the commencement of this section, shall continue in force until the commencement of section eighty-one of this Act;
>
> (*d*) The National Health (Pensioners' Medical Services Committees of Inquiry) Regulations, made under that Act, as in force immediately before the commencement of this section, shall continue in force until the commencement of section one hundred and five of this Act; and
>
> (*e*) the Pensioners' Medical Services Federal Committee of Inquiry.

He then moved as follows:

> 1.—That in paragraph (*c*) the words "eighty-one" be left out with a view to insert in lieu thereof the words: "eighty-two".
>
> 2.—That in paragraph (*d*) the word "and" (last occurring) be left out.
>
> 3.—That after paragraph (*e*) the following paragraphs be inserted:
>
> "(*f*) the National Health (Medicines for Pensioners Committees of Inquiry) Regulations, made under that Act, as in force immediately before the commencement of this section, shall con-continue in force until the commencement of section one hundred and five of this act; and
>
> (*g*) the Medicines for Pensioners Federal Committee of Inquiry and the Medicines for Pensioners State Committee of Inquiry for each State which were established by the Minister in pursuance of section sixteen of that Act shall remain established until the commencement of Part VIII. of this Act."

The amendments were agreed to.

SENATOR R. C. WRIGHT moved as follows:

> That, after clause 79, the following new clause be inserted:
>
> "79A.—(1.) Where in pursuance of the last preceding section, the Minister suspends or cancels the registration of an organization—
>
> (*a*) the Minister shall, at the request of the organization, state in writing the grounds for the suspension or cancellation; and
>
> (*b*) the organization may appeal to the Supreme Court of the State or Territory in which the principal office of the organization is situated.
>
> (2.) The Supreme Court of each State is invested with Federal jurisdiction, and jurisdiction is conferred on the Supreme Court of each Territory, to hear and determine appeals under this section.
>
> (3.) The Minister shall be the respondent in the appeal.
>
> (4.) Upon an appeal under this section the Court shall have regard to the documents which were before the Committee or the Minister and the report (if any) of the Committee.
>
> (5.) If the Court is satisfied that the organization has not contravened, or failed to comply with, a provision of this Act, or a term or condition subject to which the organization was registered, or that it is not just and equitable that its registration should be suspended or cancelled, as the case requires, the Court shall allow the appeal and order the removal of the suspension or the restoration of the registration.
>
> (6.) If the Court is not so satisfied, it shall dismiss the appeal.
>
> (7.) The Court may, where it considers it just to do so, instead of dismissing an appeal in accordance with the last preceding subsection, order the suspension of the registration instead of its cancellation, or order the reduction of the period of suspension imposed by the Minister.
>
> (8.) The Court may order either party to pay costs to the other party.
>
> (9.) The jurisdiction conferred by this section is exercisable by a single Judge of the Court, whose decision is final and conclusive."

After discussion the new clause was agreed to.

The circulated amendments of the Government were agreed to. They were as follows:

> Clause 97—
>
> (1.) Whenever—
>
> (*a*) an approved pharmaceutical chemist requests that his . . . .
>
> (2.) Whenever—
>
> (*a*) an approved pharmaceutical chemist ceases to carry on . . . the pharmaceutical chemist, medical practitioner or hospital authority shall notify the Director-General forthwith.
>
> Penalty: One hundred pounds.
>
> *Amendment.*—In sub-clause (2.), leave out "one hundred", insert "Ten".
>
> Clause 98—
>
> (1.) The Minister may determine the rates at which, and the conditions subject to which, payments shall be made in respect of the supply of pharmaceutical benefits.
>
> . . . .
>
> *Amendment.*—In sub-clause (2.), after "may" insert "after consultation with the Federated Pharmaceutical Service Guild of Australia".
>
> Clause 105—
>
> The National Health (Pensioners' Medical Services Committees of Inquiry) Regulations are repealed.
>
> *Amendment.*—After "Regulations" insert "and the National Health (Medicines for Pensioners Committees of Inquiry) Regulations".

The Bill as amended was agreed to.

The Bill was reported with amendments, and the report was adopted.

Third Reading.

The Bill was read a third time.

HOUSE OF REPRESENTATIVES.

The Bill was returned to the House of Representatives from the Senate with amendments.

The Senate's amendments were considered in committee and were agreed to.

The resolution was reported and the report was adopted.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

A REPRIMAND FOR THE SURGEON AT BUNGONIA.[1]

Colonial Secretary's Office,
3 December, 1838.

Mr. Francis Murphy,
Surgeon,
Bungonia.

Sir,

The Governor having had under consideration a representation made to him of the delay which occurred in your attendance on a servant of Mr. Styles, an urgent case, I am directed to inform you that his Excellency is of opinion that it was your duty to have attended to the first summons and that if your professional engagements are too numerous to allow you to do this you should resign your salary of fifty pounds a year which is allowed by the Government not only for the attendance of Prisoners of the Crown but to place Medical advice within the reach of Inhabitants of remote Districts by thus aiding a Surgeon to settle amongst them.

I am, Sir, etc.,
E. DEAS THOMSON.

Correspondence.

OPERATIONS FOR HYDATID CYSTS.

SIR: *Re* operations for hydatid cysts in THE MEDICAL JOURNAL OF AUSTRALIA, November 21, 1953. There seems to be some doubt as to priority in Australia in removing hydatid cysts intact. At the Mira Private Hospital in Nhill, Victoria, I removed two hydatid cysts of the liver intact, in 1913, without drainage, from a man aged about forty years. They were associated with jaundice, which disappeared soon after the operation. I heard from the patient about two years ago, and he stated that he had remained in good health.

Yours, etc.,
T. F. RYAN.

33 Collins Street,
Melbourne,
December 18, 1953.

CORNEAL ULCER.

SIR: Nobody, I suppose, gets much enjoyment out of adverse criticism, and I am only human in this regard. Nevertheless, I really am pleased that my article on corneal ulcer (October 31, 1953) has provoked two vigorously critical letters, for I wrote personally and dogmatically, as befits a man, rather than to trot out trite second-hand opinions. If my critics can improve on my views, then so much the better for the person who really matters, the patient.

In reply to Dr. James Hart, I would like to try and answer his comments in the order in which they occur in his letter, if the Editor will allow me, for the matter is of some importance.

1. Dr. Hart says the article is, presumably, written for general practitioners. With this I agree, and in this regard Dr. Hart's criticism may be justified, in that I may have gone above the general clinician level at certain points.

2. He stated that cortisone, without mydriasis, is a dangerous drug. With this also I agree, for the main burden of my article on corneal ulcer was the exhibition of atropine.

3. He states that most surgeons have seen pupils firmly bound down in cases of iritis treated with cortisone. My article was on corneal ulcer, not iritis.

4. To place a loose pad over a cocainized eye, he states, is most inadvisable. I quite agree, but where in my article is there any mention of a loose pad? It would appear to me that Dr. Hart is inadequately acquainted with the modern technique of the application of rigidly fixed pads secured by adhesive strips, a technique overwhelmingly superior to that of the old-fashioned bandage, which may slip and slide with any rotary movement of the patient's head upon the pillow.

5. As to Dr. Hart's opinion that iodine is safer than carbolic in experienced hands, I agree with him, and here I concede him a point in regard to the general clinician. It is not, however, as efficient as carbolic in experienced hands.

6. I am appalled by Dr. Hart's estimate that my use of atropine in some 5000 ulcers and abrasions must have been more disastrous than a general strike. I am not, however, appalled by the fact that throughout the war I did not lose an eye from corneal ulceration and also, except in a few cases of deep central corneal abrasion, did not lose any appreciable amount of sight.

Finally, I hope (without sarcasm) that Dr. Hart never has a corneal ulcer or abrasion; but if he does have that misfortune, I suggest to him that he weigh the inconvenience of the instillation of atropine against the possibility of a disastrous lesion.

Yours, etc.,
ARTHUR D'OMBRAIN,
Fellow in Ophthalmology of the Royal Australasian College of Surgeons.

135 Macquarie Street,
Sydney,
December 24, 1953.

LITERATURE AND SAMPLES FROM DRUG FIRMS.

SIR: I would like to congratulate Dr. R. H. O. Donald, of Melbourne, on his letter appearing in your edition of December 12. I hope that he has started something going. The spate of advertising literature descending upon the practitioner each morning has long since surpassed his requirements both of blotting paper and of information, and in fact has become a burden.

More serious are two others aspects of the matter: firstly, wastage of the country's economy in the production and marketing of millions of tablets of doubtful value, and secondly, the filching of trade by small organizations of recent appearance from the older well-established firms who are spending and always have spent a large part of their revenue on research. It seems to me a matter of urgency that a check should be put at once to the formation of new drug firms in Australia. Furthermore, that the onus should be placed by law upon each firm, to demonstrate at its own expense and whenever required by the Medical Research Council (or by scientists appointed by that Council) the preparation and standardization of its products.

Yours, etc.,
C. R. R. HUXTABLE.

18 Findlay Avenue,
Roseville,
New South Wales.
December 14, 1953.

RECENT EXPERIENCES IN THORACIC SURGERY IN NEW SOUTH WALES.

SIR: Mr. Harry Windsor (December 26, 1953) has further focused attention on the lamentable and bleak prospect confronting those brave souls who are shouldering the burden of some of the recently developed and highly exacting branches of surgery. His letter is really a challenge to this community. If the people of this State are to be privileged by the care of highly trained experts in fields such as neurosurgery and thoracic surgery, some proper provision must be made for the maintenance and appropriate working conditions of those who would render this service.

[1] From the original in the Mitchell Library, Sydney.

No consolation or help is to be gained by indicating the arboreal altitudes where *Lebensraum* and all its advantages are said to be so easily obtained. We are face to face with a new problem in medicine. In order to become a competent and well-trained practitioner in these fields a young man is required to devote years to general grounding and special training. These years are certainly not well remunerated and may indeed amount to little more than a period of renunciation of the joys and rewards which he sees his less industrious and devoted fellows enjoying in other fields. At the end of it all, he has to face a life which, though it may be full of excitement and adventure, must necessarily be almost entirely spent in the wards and theatres of public hospitals, where not least of the adventures is trying to gain a living. Only to the few who have weathered the storm in other times and in other ways, and whose names are great amongst us, go the private patients.

Mr. Windsor has mentioned the almost overwhelming difficulties of caring for an average private patient who has to have major surgical procedures in private hospitals. One might speculate on who suffers most, the patient or the surgeon.

There seems to be only one way out of all this trouble, and that is to make it possible for men taking up these branches of surgery to earn a living in keeping with their worth and the grave responsibilities and dignity of their work, under public hospital conditions. This can be done in one of two ways: either the surgeon should receive proper payment for his services, and by this I do not mean contemptuous sessional pittances, and the hospital be allowed to collect to itself such private fees as may be obtained, or the surgeon be given the right and the proper facilities to do all his private major procedures within the hospital. An institution properly appreciative of service might combine these methods.

Unless this problem is urgently faced and solved, we will see these brilliant blooms of modern surgery fade in our midst. Nobody but a lunatic would take them on in the present state. Such specialties are, however, better in the hands of the very sane, and not the mentally deranged.

Yours, etc.,

149 Macquarie Street, Sydney,
December 29, 1953.

DOUGLAS MILLER.

THE MODERN MANAGEMENT OF INFECTION.

SIR: We wish to comment on two publications which have appeared in the journal in recent months. Each dealt in part with the modern management of infection, and each was contributed with the express purpose of supplying up-to-date information to the clinician. Yet in regard to puerperal and abortional infections both failed to express modern thought and practice.

The first is the work-sheet on the use of antibiotics compiled by the National Health and Medical Research Council and published on August 22, 1953. From this otherwise excellent table there are two surprising omissions: (i) no mention is made of puerperal or abortional infections, which are still of undoubted medical and economic importance to the community, and (ii) the anaerobic streptococci are not listed. In our experience the anaerobic streptococci (often in association with non-sporing anaerobic Gram-negative bacilli) are responsible for 80% of puerperal and nearly 60% of abortional infections. Some of the bacteria known to cause puerperal and abortional infections are certainly included in the National Health and Medical Research Council's work-sheet, but this alone is of limited value to the clinician who may require to initiate chemotherapy before a correct bacteriological diagnosis is made or who may have to continue treatment without efficient bacteriological help.

We would suggest that in future publications of this nature the National Health and Medical Research Council should list the anaerobic streptococci, together with a general directive for the chemotherapy of puerperal and abortional infections. Combined penicillin and sulphonamide therapy will control over 90% of all obstetrical infections, provided administration is sufficiently early and dosage adequate. If an obstetrical infection does not respond to penicillin and sulphonamide therapy, the infecting bacteria should be tested for in-vitro sensitivities to the available antibiotics. Where facilities for adequate bacteriological tests are not available and the infection does not respond to penicillin and sulphonamides, these agents should be replaced by aureomycin or terramycin. In our experience streptomycin and chloramphenicol are so rarely the antibiotics of choice for puerperal and abortional infections that neither should be recommended in the absence of adequate bacteriological control.

The second publication for comment is the special article on "Miscarriage" contributed by request by Dr. Wilbur Joynt on October 24, 1953. We disagree with Dr. Joynt on a number of points.

1. Dr. Joynt describes the treatment of missed abortion as follows: "Once a diagnosis has been made, the uterus should be emptied surgically. If the uterus is not enlarged more than a twelve weeks' pregnancy, dilatation of the cervix with dilators and evacuation of its contents with ovum forceps and blunt curette are suitable. When the uterus is enlarged more, the insertion of two or three seatangle tents into the cervix for twenty-four hours gives very good dilatation and makes the emptying of the uterus easier and safer." We believe that this is dangerous advice. No procedure could be better designed to pave the way for critical hæmorrhage and infection than surgical intervention, particularly when accompanied by prolonged cervical dilatation and the insertion of a foreign body, in an atonic uterus filled with necrotic blood and tissue. We think it a cardinal principle of the safe management of "missed abortion" that surgical intervention should be withheld until the line of cleavage between the living and dead tissues is definite and the uterus has sufficient tone and contractility to begin expulsion of its contents as shown by uterine contractions, cervical dilatation and hæmorrhage. This may take weeks, but it must be waited for. Then, and only then, surgical intervention can and should take place. Use of the most efficient chemotherapeutic cover does not justify the disregarding of basic obstetric principles in treating this condition.

2. For the chemotherapy of "septic miscarriage" Dr. Joynt proposes: "A satisfactory combination of antibiotics is penicillin and aureomycin." This advice is contrary to the modern practice of avoiding the combination of penicillin with the broad spectrum antibiotics, a point emphasized in the work-sheet of the National Health and Medical Research Council.

3. Dr. Joynt does not distinguish between the threatened, inevitable and incomplete varieties of "septic miscarriage", but his description accords with that of infected incomplete abortion. He summarizes its surgical management as follows: "Conservative treatment is continued until the patient has been afebrile for one week, when surgical evacuation of the contents of the uterus is undertaken." This advice is out of touch with modern practice. Today, by the concurrent application of effective measures to combat shock, hæmorrhage and infection, it is possible in the majority of cases to perform uterine curettage within a few hours of the patient's admission to the ward, thus greatly reducing mortality, morbidity and stay in hospital.

Approximately 70% of abortional infections are caused by anaerobic bacteria, and in these cases the sooner the uterus is safely emptied the more rapidly will the infection resolve. In the most lethal of all anaerobic infections, that due to *Clostridium welchii*, the earliest possible emptying of the uterus consistent with safety is one of the foundations of successful treatment. A return to the conservatism proposed by Dr. Joynt would mean a return to higher mortality and morbidity, and in a busy obstetric centre with the present-day proportion of admissions to hospital beds it would be impracticable.

Yours, etc.,

A. M. HILL.
HILDRED M. BUTLER.

The Women's Hospital,
Melbourne, N.3,
December 20, 1953.

MISCARRIAGE.

SIR: Dr. R. N. Mackintosh makes some comments (M. J. AUSTRALIA, December 12, 1953) on an article of mine (M. J. AUSTRALIA, October 24, 1953).

In the management of cases of habitual abortion Dr. Mackintosh advocates the use of progesterone implants, which I regard as being relatively inert.

Swyer and Daley (1953) showed there was no rise in pregnandiol excretion in patients treated with progesterone implants. In a series of 113 women who were habitual aborters, 60 were treated with progesterone implants and the remainder with inert oral tablets. There was no significant difference in their results in the two groups.

Dr. Mackintosh describes the high dosage œstrogen therapy advised by the Smiths of Boston, whose results have not been reproduced by other workers. Greenhill (1953) repeats his previous contention that the high dosage œstrogen therapy is practically useless.

Dr. Mackintosh condemns the use of the blunt flushing curette on, I believe, somewhat theoretical grounds. I do not know the extent of his personal experience with this instrument, but can only assure him that I have found it very useful and safe in the type of case I described.

Routine utero-salpingography in a series of cases suggests that the incidence of post-abortal tubal occlusion is lower with the flushing curettes than with the standard instrument.

I appreciate Dr. Mackintosh's interest in and comments on my article.

Yours, etc.,

Adelaide, January 2, 1954. W. F. JOYNT.

References.

SWYER, G. I. M., and DALEY, DOREEN (1953), "Progesterone Implantation in Habitual Abortion", *Brit. M. J.*, 1: 1073.

GREENHILL, J. P. (1953), "The Year Book of Obstetrics and Gynecology (1953-1954 Year Book Series)", 30.

RESTORATION OF AUTHORITY.

SIR: I desire to inform you that in accordance with the provisions of Regulation 25(2) under the *Police Offences (Amendment) Act*, the Minister has directed that the withdrawal of the authority of Dr. Norman Roy Paterson, of Cobargo, to procure and be in possession of drugs to which the Act applies for the purpose of his profession and to issue prescriptions for such drugs, shall cease to operate on and from Thursday, December 31, 1953. One of the conditions under which Dr. Paterson's authority is being restored is that his drug supplies be obtained from one source, and, in this connexion, he has nominated Elliotts and Australian Drug Proprietary, Limited, 20 O'Connell Street, Sydney.

Would you be good enough to publicize the restoration of this authority in your journal?

Yours, etc.,

Chief Secretary's Department, Sydney, December 23, 1953. C. J. BUTTSWORTH, Under Secretary.

Obituary.

WILFRID LIEVESLEY NICKSON.

DR. ETHEL BYRNE has sent the following appreciation of the late Dr. Wilfrid Lievesley Nickson.

Dr. Wilfrid Lievesley Nickson died in the Nickson Wing of the Royal Newcastle Hospital on November 14, 1953. It was perhaps fitting, since he had to die, that it was in the Nickson wing, which was named after his late father, but which, to the younger generation, will always stand as a memorial to the son as well.

Wilfrid Nickson—Toby, as he was known to a large circle of colleagues and friends—graduated from the University of Sydney in 1921, his medical studies having been interrupted by three years with the Australian Imperial Force, as a result of which he walked with a limp to the time of his death.

His first appointment was to the Royal Prince Alfred Hospital, to which he showed his affection and loyalty by regularly attending the annual "back to P.A. week". He came to Newcastle Hospital in 1923 as a resident medical officer, and there laid the foundation of his career as a general practitioner of outstanding ability, and a gynæcologist and obstetrician of note. He was appointed junior gynæcologist on the staff of the hospital, and on the retirement of his father to the consulting staff became senior honorary gynæcological surgeon.

Only the people who worked with Toby can have any idea of the amount of work he did in this capacity. He never failed to pay a daily visit to the hospital, and his vast store of knowledge and excellent library were at the service of any medical practitioner requiring advice or help. It was hoped that he would publish the results of his operative work, which was meticulously checked with histological examination of all tissues removed, and this he intended to do when he retired from his busy and exacting practice.

Hospital resident medical officers found their terms with Dr. Nickson invaluable—he was never too busy to help with a problem and would spend hours at the hospital instructing resident medical officers, lecturing to nurses, and by his mere presence bringing confidence and reassurance to his many patients. He was one of the first members of the staff to appreciate fully the almoner service established by the hospital, and on one round a week was accompanied by the almoner; the social problems of the patients were discussed with the almoner and practical efforts were made to alleviate them.

"Toby's" death has robbed the medical profession of a practical idealist, one who gave a lifetime of service to his fellow men, who considered himself last (if at all), and who maintained to the end the highest ideals of "doctor-patient relationship". His uncomplaining courage during his illness was a lesson to everyone. He was nursed at his home by his wife and daughters until two days before his death. The sympathy of everyone goes to his family.

CHARLES CRAWFORD MacKNIGHT.

DR. F. E. LITTLEWOOD has sent the following appreciation of the late Dr. Charles Crawford MacKnight.

In the passing of Charles Crawford MacKnight the medical profession loses one of its fast disappearing (if not already defunct) old-time family physicians. Dr. MacKnight took a personal interest in the lives of his patients and was conversant with the pedigree and family history of nearly all of them. He never aspired to surgery, but was a sound physician and careful and popular accoucheur. In the later years of his post-war life he specialized in anæsthetics and was cheerfully on call of his confreres at any hour of the day or night.

Educated at the Melbourne Grammar School, he obtained his medical diploma at the University of Edinburgh. Two of his brothers were medical men, as is also one of his nieces, who is in active practice in Collins Street, Melbourne. His old home was Dunmore Station, near Warrnambool, and the whole of his practising life was confined to Warrnambool. He never married, because, I fancy, of family ties or responsibilities.

His war service was outstanding. At the outbreak of war in 1914 he volunteered for service in the Australian Imperial Force and sailed with the 4th Australian Light Horse. He was in camp at Mena in Egypt and served in Gallipoli for some months before being invalided to Malta. He was well over age for a regimental officer. He served in France for many months in different capacities. On discharge from the Australian Imperial Force he joined the staff of the Repatriation Department.

He was a fearless horseman and rode in many jumping races on the Warrnambool racecourse. His interest in military affairs dates back to the days of Colonel Tom Price, under whom we both served in the V.M.R. back in the early nineties. He was a keen and very good rifle shot; on many occasions we have trudged over to the rifle butts for practice at Warrnambool at 6 a.m. He was a very likeable man, and I am sure there will be many old folk still living who will have grateful and kindly recollections of their old doctor, C. C. MacKnight.

Australian Medical Board Proceedings.

QUEENSLAND.

THE following have been registered, pursuant to the provisions of *The Medical Acts*, 1939 to 1948, as duly qualified medical practitioners: Deakin, Malcolm James, M.B., B.S., 1951 (Univ. Sydney); Baldacchino, Charles Francis, M.B., B.S., 1951 (Univ. Adelaide); Crisp, Thomas, M.R.C.S. (England), L.R.C.P. (London), 1946, D.M.R.D. (London), 1951; Courtney, George John, M.B., B.S., 1953 (Univ. Sydney).

The following have been registered, pursuant to the provisions of *The Medical Acts*, 1939 to 1948, as duly qualified medical practitioners (the qualifications in each case are as follows: M.B., B.S., 1953, Univ. Queensland): Ash, Donald Harold; Astill, Roy; Barrett, Timothy Colvile; Bovey, Reginald John; Brooks, George Peter; Buchanan, Glen;

Colvin, John Llewellyn; Cossins, Graham Alan; Cox, John Roy; Dart, Clive Logan; Dixon, James Stuart; Egerton, William Sydney; Elliott, Brian Carvolth; George, John Francis; Gray, George Lionel; Greer, John Herbert; Hansen, Irwin Peter; Harveyson, Keith Byron; Hemsley, James Bleakley; Hepple, Francis James Barnet; Hogg, Daniel Brodie; Howes, Samuel John; James, Ronald Henry; Kerr, Allan James; Klug, Bartholomew; Lee, Eric Wilfred; Marriott, Leonard Samuel; Morwood, Nancy; McFarlane, Jean Fergus; McKay, Darrell Murray; Maclean, Alexander John; Orford, William Ernest; Primmer, Conrad James; Richards, Elizabeth Muir; Robertson, Duncan; Savill, Miles Fitzherbert; Smith, Brian Frederick Charles; Smith, Paul Kelleher; Smith, Peter Moore; Stretton, Leonard Thomas; Thew, Hugh Merton; Thomas, David Powell; West, Harold Reginald; Ellwood, Robert William; Hall, Judith Ann; Stevens, Stanley Paul.

TASMANIA.

THE following has been registered, pursuant to the provisions of the *Medical Act*, 1918, as a duly qualified medical practitioner:

Jacks, Lawrence Maurice, M.B., B.S., 1950 (Univ. Sydney).

Medical Prizes.

HUBERT NORMAN PRIZE OF THE SOCIETY FOR THE STUDY OF ADDICTION.

THE Society for the Study of Addiction announces the constitution of the Hubert Norman Prize of one hundred guineas established to stimulate research into causation and prevention of addiction. The competition is open to both medical and non-medical workers throughout the world, only officers of the Society being ineligible.

The subject of the first Hubert Norman Prize will be: "Study or Investigation of Substances, other than 'Antabuse' or its Derivatives, Causing Distaste, Disinclination, or Dislike for Alcohol." There are quite a number of such substances, hydrogen sulphide being one of them (see *Brit. J. Addict.*, 1951, 48: 72).

Contributions will be assessed by a panel of independent experts. Should no contribution be of sufficient merit, the prize will not be awarded and the amount will be reserved for the following Hubert Norman Prize. Three copies of the manuscript typewritten in English should reach the editor of the *British Journal of Addiction*, 34 Addison Road, London, W.14, not later than December 31, 1954. The award will be made in January, 1955. The selected contribution may be published in the *British Journal of Addiction* and the winner invited to present it at a meeting of the Society for the Study of Addiction. Inquiries concerning the competition should be addressed to the editor of the *British Journal of Addiction*.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

General Revision Course.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that the annual general revision course for 1954 will be held for two weeks from Tuesday, April 27, to Friday, May 7, inclusive. The main theme of the course this year will be gastro-enterology, and in addition the programme will, as in former years, be a comprehensive survey of modern trends in diagnosis and treatment of special value to general practitioners. The programme will include special demonstrations, seminars and conferences as follows: neurology, at the Northcott Neurological Centre; psychiatry, at the Broughton Hall Psychiatric Clinic; pædiatrics, at the Royal Alexandra Hospital for

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED DECEMBER 19, 1953.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.[2]	Australian Capital Territory.	Australia.[2]
Acute Rheumatism	5(1)	..	..	..	..	..	..	..	5
Amœbiasis	..	..	..	..	1	..	..	..	1
Ancylostomiasis	..	..	..	..	..	..	..	..	..
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	1	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus'	2(2)	..	..	..	..	..	..	..	2
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	2(2)	2(1)	5(5)	..	..	..	..	..	9
Diphtheria	4(2)	..	3(3)	..	4(4)	..	..	..	11
Dysentery (Bacillary)	..	..	1(1)	..	..	..	..	..	1
Encephalitis	1	..	..	1	..	..	..	..	2
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	..	6(1)	..	..	6(5)	..	..	..	12
Lead Poisoning	..	1(1)	..	..	..	..	..	..	1
Leprosy	..	..	1	..	..	..	..	..	1
Leptospirosis	..	..	6	..	..	..	..	..	6
Malaria	..	..	1(1)	..	1	..	..	..	2
Meningococcal Infection	2	1	..	..	..	..	..	..	3
Ophthalmia	..	..	..	..	1	..	..	..	1
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	1(1)	..	..	1
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	7(6)	1	..	2(2)	2(2)	..	..	..	12
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella	..	10(10)	1	..	41(21)	..	..	..	52
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	19(14)	15(6)	10(9)	2(2)	6(6)	..	..	1	53
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	35(25)	13(7)	5(3)	7(3)	13(7)	3	..	..	76
Typhoid Fever	2(1)	..	..	..	..	..	..	..	2
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	1(1)	..	..	..	1
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.
[2] Figures not available.
[3] Figures incomplete owing to absence of returns from the Northern Territory.

Children; fractures, at Sydney Hospital; gynæcology and obstetrics; new drugs and therapeutic measures; radiographic conference; electrocardiographic conference. Members of the course are invited to bring their own X-ray films and electrocardiograms for discussion at the conference. Fee for attendance will be £12 12s. full time, or £6 6s. for one week or part time. Early written application is essential and should be made to the Course Secretary, The Post-Graduate Committee in Medicine, 131 Macquarie Street, Sydney. Telephones: BU 5238, BW 7483. Telegraphic address: "Postgrad, Sydney."

SEMINARS AT THE ROYAL PRINCE ALFRED HOSPITAL.

SEMINARS open to all members of the medical profession will be held in the Scot Skirving Lecture Theatre, Royal Prince Alfred Hospital, Sydney, on Fridays from 1.15 to 2.15 p.m. during the period February 19 to June 25, 1954. The programme will be as follows:

February 19: Cardio-vascular section, "Some Electrocardiographic Features of Myocardial Infarction and Ischæmic Heart Disease". February 26: Endocrinology and metabolism section, "Pituitary Hyperfunction". March 5: Hæmatology section, "Anæmia and the Alimentary Tract". March 12: Gastro-enterology section, "Post-Cholecystectomy States". March 19: Neurology section, "Recent Advances in Neuro-Surgery Abroad: (i) Great Britain and Europe", Mr. R. A. Money. March 26: Pædiatrics section, "Growth".[1] April 2: Clinico-pathological conference. April 9: Thoracic section, "Drug Sensitivity of the Tubercle Bacillus". April 16: Dermatology section, "The Use of ACTH in Dermatology with Special Reference to Pemphigus". April 23: Cardio-vascular section, "The Assessment of the Cardiac Patient in Relation to Anæsthesia and Air Travel". April 30: Endocrinology and metabolism section, "Pituitary Hypofunction". May 7: Hæmatology section, "Hæmochromatosis". May 14: Gastro-enterology section, "Œsophageal Stricture". May 21: Neurology section, "Recent Advances in Neuro-Surgery Abroad: (ii) The United States of America", Mr. R. A. Money. May 28: Thoracic section, "Eosinophilia in Pulmonary Disease". June 4: Endocrinology and metabolism section, "Disorders of Parathyroid Function". June 11: Hæmatology section, "Treatment of Leuchæmia: The Present Position". June 18: Cardio-vascular section, "The Significance of the Basal Systolic Murmur". June 25: Pædiatrics section, "Tetany".[1]

Notice.

ORTHOPTIC COUNCIL OF NEW SOUTH WALES.

A COURSE of instruction in orthoptics, of eighteen months' duration for a limited number of successful applicants, will be conducted by the Orthoptic Council of New South Wales, commencing in March, 1954. Applicants must be eighteen years of age and should apply to the Honorary Secretary, Dr. E. J. Donaldson, 229 Macquarie Street, Sydney, submitting suitable references and stating educational standards reached. Applications will close on February 6.

Research.

NICHOLS FELLOWSHIP.

THE council of the Royal Society of Medicine invites applications for a grant of £225 *per annum* in aid of research to be carried out to advance knowledge in obstetrics and gynæcology, which will be awarded on the recommendation of the council of the Section of Obstetrics and Gynæcology of the Society. The place at which the work is to be carried out and an outline of the proposed research must be stated in the application. A preliminary report on the progress of the research must be submitted at the expiration of the first six months.

[1] Followed by meeting at Royal Alexandra Hospital for Children at 4.30 p.m.

The fellowship will be awarded in the first place for a period of one year and, at the discretion of the Council, may be extended for a second year. Applications must be received by the Secretary, Royal Society of Medicine, 1 Wimpole Street, London, W.1, by May 15, 1954, and candidates must state their position with regard to call-up for military service.

Diary for the Month.

JAN. 26.—New South Wales Branch, B.M.A.: Organization and Science Committee.
JAN. 27.—Victorian Branch, B.M.A.: Branch Council Meeting.
JAN. 29.—Queensland Branch, B.M.A.: Council Meeting.
FEB. 3.—Western Australian Branch, B.M.A.: Council Meeting.
FEB. 5.—Queensland Branch, B.M.A.: General Meeting.
FEB. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
FEB. 12.—Queensland Branch, B.M.A.: Council Meeting.
FEB. 13.—Tasmanian Branch, B.M.A.: Annual Meeting.
FEB. 15.—Victorian Branch, B.M.A.: Finance Subcommittee.
FEB. 16.—New South Wales Branch, B.M.A.: Medical Politics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Tasmania: Part-time specialist appointments for the north-west coast of Tasmania.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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